

Flight, May 18, 1916.

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

Order "FLIGHT" to be either delivered or reserved for you regularly.

As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

EDITORIAL COMMENT.



ALTHOUGH, when "FLIGHT" reaches our readers, it will be known generally what the detailed intentions of the Government are for dealing with the very pressing problem of the control of the air, at the time when this journal has to close for press, the discussion in the House of Commons, which was to be associated with an announcement from the Cabinet, just about enters upon its opening stages. Cabinet secrets or no Cabinet secrets, rumour has for the last week or so been more persistent than ever in coupling

The Call of the Air.

Lord Curzon's name with the future of the air problem—whether the body appointed to deal with the question as a whole turns out to be a revival upon much broader lines of the original Air Committee, or whether the announcement on Tuesday conveys the information that it has been decided to create a full-blown Air Minister. The former, in our opinion, although from certain "secret" whisperings there are possibilities of a surprise in store, is the more likely to be the outcome, in which case, although we shall regard the formation of an Air Ministry as being for the moment merely postponed, we shall be inclined to accept with resignation the lesser body, provided a really free hand is accorded this Committee to evolve plans upon such a generous scale as to bring our service of the air more into line with what the exigencies of the present trend of the war demand. It will be essential, however, that there should be no mistake about the Committee having the power to ensure that their plans of action, when once decided upon, shall be carried through. If, as was the case with the original committee, this body is to be able merely to promulgate suggestions for somebody else's approval or condemnation, the whole position becomes an absurdity, and will once more demonstrate the inefficiency of our rulers in being able to grapple with such new problems and positions as they arise, which the present world's war is forcing to the front. All personal likes or dislikes, political or otherwise, in the selection of the men to take hold of this air problem should be thrust aside. It is a case in which any man, however admirable he may have proved himself to be in other phases of his career, should speedily find his level. If, as is generally held, Lord Curzon should be the strong personality selected to guide the destinies of our future position in the Air,

whatever opinions may exist as to his intimate knowledge, or the reverse, of the fundamental principles governing the whole science and art, it will be up to those who have the true welfare of the Industry itself and the coming Imperial Air Service at heart to give support to the new leader ungrudgingly until such time as by his acts he demonstrates his failure at having grasped the really vital broad principles involved in his task. Incidentally, if Lord Montagu is not one of the elect of the body, in our opinion a serious blunder will have been perpetrated. In like manner, as we have long since suggested, we should like to see Lord Sydenham included in its composition. The Air Department, however, whatever departmental form it may actually assume at the moment, has come to stay, and will become an integral part of our Imperial defence and offence. Men co-opted to it may come and go, may be found wanting in their efforts at administration of this new arm, and little surprise if such be the case. In fact the surprise will be, as in the past, if such falling short is not realised at the early stages of the body, however constituted. We have already, some little time ago, expressed our views that from the technical side of aeronautics, there is no evidence of Lord Curzon having anything but the most cursory grounding. But, on the other hand, he is recognised as a masterful administrator and as a man of great organising powers, and when he makes up his mind upon any particular subject, it takes more than a mild protest to turn him aside from achieving his purpose. Presumably, he has already taken hold of the principles which the first departure of a reorganised Air Service should follow. If he takes up the position which public rumour has already allotted to him, with such men to assist him in the interests of the nation as are available for the mere summoning, there should be no insuperable difficulties in the way of so experienced a man of world affairs arriving at conclusions which will carry with them the evidence of a realisation of proportion, when in focus with the many other vital methods which are developing on all sides to ensure that complete final victory for the Allies which the entire world (outside the Central Empires and their dupes) are so confidently looking forward to. If any mistake be perpetrated, in all probability it will be in a misguided respect for "vested

interests" more or less of a sentimental character. We sincerely trust that whoever may be the man selected to preside over the department he will not make this one crowning false step. It is that direction in which one of the greatest risks of failure looms large. Nothing must be allowed to take precedence of the Imperial needs, and all personal feelings and interests must be ruthlessly scrapped if the new Department is to justify itself. Affairs should be conducted upon such lines as would readily suggest themselves to any eminent business man of our times, always having one final objective in view, the ultimate founding of the entire Service, not forgetting the Industry itself, upon such a solid basis, as to ensure those who have in the past laboured so persistently and effectually, being in a position to "carry on" and fill without hitch the huge demands which are likely to be made immediately, and more than ever in the years to follow, upon their capacity for "supplying the goods." Upon these lines supremacy for this country will be assured, and we, with others who have been plugging away at this all-important section of our present and future strength, will have reason to rest content with the result of their campaign, which has been for so long carried on in the face of prejudice and blatant ignorance of the effect which the crowning realisation of the life-work of the Brothers Wright brought about. When we have to counter the methods employed by the Germans during this war, glove methods are a mistake. Bold enterprise can be the only possible reply to such abuse of the laws of civilisation. Advantage should be taken of every effort by our constructors to produce more and more efficient air war machines, so that, instead of following in the wake of the Huns in springing surprises upon us, we should lead in this respect. This we can easily do if only an open mind is kept in the selection of types of machines, machines constructed for definite jobs. It is true that in some directions this more enlightened policy has of late been more in evidence than of yore. But there is still ample room for great expansion in this respect, and it will be the duty of those to be put in control of the air affairs of the nation that they use their imagination and see that our surprises for the enemy are more and more drastic as the war continues to drag its weary tale of combat and destruction towards its final stages.



THE ROLL OF HONOUR.

The Secretary of the Admiralty announces the following casualties:—

Previously reported Missing, now Unofficially reported Killed.

Flight Sub-Lieutenant Frank Besson, R.N.

Slightly Wounded (remained on duty).

Second Lieutenant Edward C. Lunt, R.M., R.M.A., Anti-Aircraft Brigade.

Under date April 29th: Missing.

Flight Sub-Lieutenant Cecil R. Terraneau, R.N.

Under date May 8th: Accidentally Injured.

Flight-Lieutenant Conway W. H. Pulford, R.N. (Lieutenant, R.N.).

The War Office have notified the following casualties:—

Killed.

Second Lieutenant E. G. Ryckman, Royal Flying Corps.

Previously reported Missing, now reported Killed.

Captain W. Knox, Cameron Highlanders and R.F.C.

Lieutenant F. A. Garlick, Royal Flying Corps.

Wounded.

Captain H. E. Van Goethem, Royal Flying Corps.

Second Lieutenant C. J. Creery, Royal Flying Corps.

Second Lieutenant G. H. J. Mercer, Duke of Cornwall's L.I. attached R.F.C.

Previously reported Missing, now reported Prisoner of War.

Lieutenant O. Lerwill, Royal Flying Corps.

Previously reported Missing, now reported Died as Prisoner of War.

2373 1st Class Air-Mechanic W. H. Cox, Royal Flying Corps.

Died of Wounds.

7194 2nd Class Air-Mechanic G. F. Atwell, Royal Flying Corps.

Missing.

Captain C. Bruno, Royal Flying Corps.

Prisoner of War.

Lieutenant C. W. Hill, Royal Flying Corps.



The Burgess machine in flight at Hendon.

The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 10th inst. :—

The following temporary commissions (R.N.V.R.) have been granted, with seniority of May 9th, and all appointed to "President," for R.N.A.S. : Lieuts. E. H. Fitchew, N. Vaux, S. Hedley, and W. F. Vernon; Sub-Lieuts. N. V. Wrigley (late Flight Sub-Lieutenant) J. G. Mallett, H. C. Willson, and V. F. Bartlett.

The following appeared among the Admiralty announcements of the 11th inst. :—

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows, and appointed to "President," additional, for R.N.A.S. : W. L. Anderson, May 10th; J. R. Blunt, May 11th; J. K. Fryer-Smith, T. P. M. Alexander, A. R. Greenwell, K. H. Millward, W. G. Kendrick, C. B. Wincott, J. E. Scott, J. E. Ruthven, W. K. Rae, L. H. Rochford, E. G. Selous-Hodges, and R. V. Weeks, all May 15th.

Royal Flying Corps (Military Wing).

The following appeared in the *London Gazette* of the 9th inst. :—

Attached to Headquarter Units.

Comp. Commandant (graded for purpose of pay as a Staff-Captain).—Qr.-Mr. and Hon. Lieut. E. J. Parker, R.F.C. (Military Wing); March 12th, 1916.

Establishments.

Squadron-Commanders (and to be Temporary Majors whilst so employed).—Second Lieut. (Temporary Capt.) R. A. Cooper, Hamps. Yeo. (T.F.), from a Flight-Commander; April 19th, 1916.

Capt. R. Lorraine, Special Reserve, from a Flight-Commander, April 24th, 1916. Qr.-Mr. and Hon. Lieut. (Temporary Capt.) F. H. Kirby, V.C., from an Equipment Officer; April 26th, 1916.

Flying Officers (Observers).—Temporary Second Lieut. C. C. Treant, N. Lan. R.; Oct. 21st, 1915. Second Lieut. L. J. Bayly, R.A., and to be seconded; Nov. 10th, 1915. April 1st, 1916: Lieut. F. V. Woodman, 32nd (Res.) Can. Inf. Bn.; Lieut. P. E. M. Le Gallais, R. Suss. R., and to be seconded; Temporary Second Lieut. W. Baillie, R. Highrs., and to be transferred to the General List; Temporary Second Lieut. J. G. Will, Leins. R.; Second Lieut. D. G. A. Allen, Durh. L.I., Special Reserve, and to be seconded. April 19th, 1916: Temporary Lieut. D. A. D. S. MacGregor, A.S.C., and to be transferred to the General List; Temporary Lieut. H. Fowler, R.A., and to be transferred to the General List.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank R. H. Jarvis and A. C. Hatfield.

The following appeared in a supplement to the *London Gazette* issued on the 10th inst. :—

Flight-Commanders.—Lieut. E. W. Barrett, Special Reserve, from a Flying Officer, and to be Temporary Captain whilst so employed; Mar. 29th, 1916. From Balloon Officers; April 1st, 1916: Capt. A. L. Kent-Lemon, York and Lanc. R. Second Lieut. J. S. D. Berrington, Lan. Fus. (T.F.) and to be Temporary Captain whilst so employed. From Flying Officers, and to be Temporary Captains whilst so employed: Second Lieut. A. J. Capel, Som. L.I.; April 16th, 1916. Lieut. A. B. Adams, Special Reserve; April 20th, 1916. Lieut. C. W. Snook, Special Reserve; April 24th, 1916.

Equipment Officers.—From Assistant Equipment Officers, and to be Temporary Captains while so employed; April 26th, 1916: Temporary Lieut. W. W. Tullis, General List; Lieut. J. E. Storey, Special Reserve; Second Lieut. (Temporary Lieut.) E. A. Jackson, 5th Yorks. L.I. (T.F.); Qr.-Mr. and Hon. Lieut. G. Laing; Lieut. G. D. Hannay, Special Reserve; and Lieut. J. T. Spittle, Special Reserve. Second Lieuts. Special Reserve: J. P. Rowell, H. R. Lecomber, G. F. Underwood and S. S. Kennedy.

Flying Officers.—April 16th, 1916: Capt. D. B. Gray, 48th Pioneers, Ind. Army; Temporary Second Lieut. A. Cairnduff, R. Muns. Fus., and to be transferred to the General List; Temporary Lieut. P. G. H. Fender, General List; Temporary Second Lieut. P. A. Moodie, R. Fus., and to be transferred to the General List; Second Lieut. L. B. F. Morris, R. W. Surr. R., Special Reserve, and to be seconded; Temporary Second Lieut. F. W. Honnet, General List; Second Lieut. P. Tremlett, Special Reserve; Second Lieut. R. H. Jarvis, Special Reserve; and Temporary Second Lieut. R. D. Oxland, General List. Second Lieut. G. H. C. Crooke-Rogers, Worc. R., and to be seconded; April 18th, 1916.

Second Lieut. J. C. Griffiths, Special Reserve; April 19th, 1916. April 20th, 1916: Lieut. I. T. Lloyd, S. Wales Bord., and to be seconded; Second Lieut. R. D. Sampson, Worc. R., Special Reserve, and to be seconded; Second Lieut. L. F. Hutcheon, Special Reserve; Second Lieut. J. A. G. Gilroy, Special Reserve; and Second Lieut. A. C. Hatfield, Special Reserve. April 21st, 1916: Lieut. J. W. Langmuir, Motor Machine Gun Service, Can. Ex. Force; Second Lieut. T. S. Sharpe, Glouc. R., Special Reserve, and to be seconded; Second Lieut. N. Brearley, L'pool R., Special Reserve, and to be seconded; and Temporary Second Lieut. G. H. Hackwill, Som. L.I., and to be transferred to the General List. April 22nd, 1916: Capt. G. W. Webb, R. Ir. Rif., Special Reserve, and to be seconded; Lieut. L. G. S. Payne, Suff. R., and to be seconded; Second Lieut. J. K. Parker, R. Sc. Fus., and to be seconded; Second Lieut. P. Arbon, Special Reserve; and Second Lieut. J. Manley, Special Reserve. April 23rd, 1916: Temporary Second Lieut. O. V. Thomas, R.W. Fus., and to be transferred to the General List; Second Lieut. E. W. Edwards, R. W. Surr. R., Special Reserve, and to be seconded; Second Lieut. G. H. Lewis, North'n R. (T.F.); and Second Lieut. J. B. Brophy, Special Reserve. From Flying Officers (Observers): Lieut. (Temporary Capt.) C. C. Haynes, Devon R.; April 16th, 1916. Second Lieut. R. L. Chidlaw-Roberts, Hamps. R.; April 21st, 1916.

Flying Officers (Observers).—Temporary Lieut. D. M. Faure, A.S.C., and to be transferred to the General List; April 23rd, 1916. April 25th, 1916: Temporary Second Lieut. R. G. H. Adams, Midd'x R.; Second Lieut. J. F. P. B. Quinlan, R.G.A., and to be seconded.

Assistant Equipment Officers.—Second Lieut. W. R. Lewis, Special Reserve, March 6th, 1916. (Substituted for the notification in the *Gazette* of May 8th, 1916.) Temporary Lieut. J. L. Salway, Wilts. R., and to be transferred to the General List; March 13th, 1916. Second Lieut. (Temporary Lieut.) R. A. Law, Arg. and Suth'd Highrs. (T.F.); March 14th, 1916. Temporary Lieut. D. Sinclair, General List; April 3rd, 1916. Second Lieut. M. O. Darby, Special Reserve; April 24th, 1916.

Memoranda.—To be Temporary Second Lieutenants for duty with the R.F.C. : Cadet Norman Goudie, from Lond. R. (T.F.); April 22nd, 1916. April 29th, 1916: Cadet James A. Kirker, from Dublin Univ. O.T.C.; Pte. Leslie E. Owen, from Inns of Court O.T.C.; Pte. Walter H. Longton, from 1st Worc. Yeo. (T.F.); Pte. Lewis F. Jones, from R. Fus.; Pte. Edwin P. Jay, from Lond. R. (T.F.); Pte. Carleton M. Clement, from 30th Inf. Bn., Can. Ex. Force; Sapper Edgar H. Cambridge, from second Fd. Co., Australian Engrs., Australian Imp. Force; Rifleman Alfred G. Cardwell, from a Prov. B. (T.F.).

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: L. F. Hutcheon, P. Tremlett, J. A. G. Gilroy, J. C. Griffiths, P. Arbon, J. Manley, M. O. Darby and A. F. Palmer.

To be Second Lieutenants (on probation): George F. Golding; April 6th, 1916. April 29th, 1916: Stanley G. Dowsett, Gyles Mackrell, Robert S. Jameson, Frank B. Baragar, Nicholas Greenwell, Frank D. H. Sams, Eric B. P. Barrow, Eric C. Pashley, Leonard F. Peaty, Francis F. Woodyer, Frank Stoner, Edwin S. T. Cole, Walter W. G. Beatson and Laurence D. Russell.

The Christian names of Lieut. Charles Drury Fuller are as now described, and not as in the *Gazette* of March 5th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 11th inst. :—

Wing-Commander.—Capt. (Temporary Major) J. G. Hearson, D.S.O., R.E., from a Squadron-Commander, and to be Temporary Lieutenant-Colonel whilst so employed; May 6th, 1916.

Squadron-Commander.—The date of seniority of Major A. D. Carden, R.E., is May 20th, 1912, and not as in the *Gazette* of Dec. 8th, 1915.

Flight-Commanders.—Capt. A. V. Holt, R. Highrs., from a Flying Officer; April 23rd, 1916. Capt. R. L. S. Raffles, R. Welsh Fus., Special Reserve, from a Balloon Officer; April 27th, 1916.

Flying Officers.—Lieut. G. W. Wentworth, Norf. R., from a Staff Lieutenant at the War Office; April 19th, 1916, but with seniority from Aug. 26th, 1915. Second Lieut. E. Duveen, Special Reserve; Mar. 2nd, 1916.

Supplementary to Regular Corps.—The notification of the appointment of James H. Banks as Second Lieutenant, which appeared in the *Gazette* of April 6th, 1916, is cancelled. Second Lieut.

Archibald Livingstone-Allan relinquishes his command: April 30th, 1916.

To be Second Lieuts. (on probation); April 3rd, 1916: Charles T. L. Millington, Albert Champion, and Frederick Alexander. Cecil H. Whittington; April 10th, 1916. Herbert W. Mills; April 11th, 1916.

The following appeared in the *London Gazette* of the 12th inst.:—
Squadron-Commander.—Capt. A. V. Bettington, Special Reserve, from a Flight-Commander, and to be Temporary Major whilst so employed; April 30th, 1916.

Flying Officers.—Second Lieut. (Temporary Lieut.) G. W. Swanson, Hamps. R. (T.F.), from an Assistant Equipment Officer; April 22nd, 1916. April 25th, 1916: Lieut. O. T. Boyd, 5th Cav., Ind. Army; Second Lieut. A. M. Thomas, Special Reserve. From Flying Officers (Observers): Capt. A. V. Holt, R. Highrs.; Second Lieut. M. Jacks, E. Lan. R., and to be seconded; April 22nd, 1916.

Assistant Equipment Officers.—Second Lieuts. (Special Reserve) C. E. Robertson, B. J. Nicholson and F. Alexander; May 2nd.

Memoranda.—Lance-Corpl. James H. Banks, from A.S.C., to be Temporary Second Lieutenant on the General List for duty with the R.F.C.; March 13th, 1916. Private Stanley H. Preston, from Inns of Court O.T.C., for duty with the R.F.C.; May 6th, 1916.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: R. H. Cronyn, J. B. Brophy, C. E. Robertson, B. J. Nicholson and W. R. Lewis.

To be Second Lieutenants (on probation): Arthur R. Thomas; April 17th, 1916. Cyril R. Young; April 22nd 1916. James M. Batting, Frederic C. Deane, Stanley W. Taylor, Conrad H. Biddlecombe, Guy P. C. Willeby, Robert H. Timmis, and Reginald H. Norton-Dawson; May 6th, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 13th inst.:—

Squadron-Commander.—Capt. F. G. Small, Conn. Rang., from a Flight Commander and to be Temporary Major whilst so employed; April 30th, 1916.

Flight-Commanders.—Capt. D. Rainsford-Hannay, 53rd Sikhs, Ind. Army, from a Balloon Officer; April 20th, 1916. Lieut. P. Le G. Gribble, Hamps. Yeo. (T.F.) from a Flying Officer, and to be Temporary Captain whilst so employed; April 30th, 1916.

Flying Officers.—April 25th, 1916: Temporary Second Lieut. A. G. Brooke, General List; Temporary Second Lieut. S. F. Browning, General List. April 27th, 1916: Second Lieut. R. H. Cronyn, Special Reserve; Temporary Lieut. C. F. Portal, R.E., Special Reserve, from a Flying Officer (Observer).

Assistant Equipment Officer.—Second Lieut. G. F. Golding, Special Reserve; May 4th, 1916.

* * *

THE FLYING SERVICES FUND—ADMINISTERED BY THE ROYAL AERO CLUB.

The Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

* * *

Honours for the R.N.A.S.

A SUPPLEMENT to the *London Gazette* issued on May 15th contains a list of awards approved by the Admiralty in recognition of services rendered by petty officers of the Eastern Mediterranean Squadron between the time of landing in the Gallipoli Peninsula in April, 1915, and the evacuation in December, 1915-January, 1916. Among them are the following:—

To receive the Distinguished Service Medal.

C.P.O. Mechanic B. J. W. BRADY.

P.O. Mechanic L. T. SANDERSON.

The following petty officers have been mentioned in despatches by the Vice-Admiral Commanding the Eastern Mediterranean Squadron for good services in action during the period above referred to:—

Chief Petty Officers H. BRADFORD, A. H. CUMMINGS, E. DESSAUSOIS, H. J. HUGHES, G. LACEY, H. NELSON, P. R. PRATT, E. J. PROTHERO, D. M. REES, C. SNOW, and J. SUTHERLAND.

Chief Petty Officer, 2nd Grade, J. EVASON.

Memorandum.—Second Lieut. H. Hemming, Worc. R., to be Temporary Lieutenant whilst employed with the R.F.C.; April 1st.

Temporary Second Lieutenants to be Temporary Lieutenants whilst employed with the R.F.C.; April 1st, 1916: G. B. Ward, T. H. McDowell, A. J. M. Clarke, G. N. Teale, V. G. A. Bush, F. G. Wilson, H. L. Wallis, S. E. Parker, T. A. Oliver (on probation), G. G. Lever, G. W. M. Green, N. A. Bolton, A. Duguid, R. Raymond-Barker, E. R. Tempest, F. H. Furness-Williams, A. C. Hagon, E. S. Moulton-Barrett, A. D. Pearce, P. G. Scott, J. R. Philpott, C. M. Gibson, R. H. Peck, G. H. Gordon, H. M. Whitehead, G. B. Hodgson, J. B. Tait, A. J. Insall, S. W. Price, J. L. M. de C. Hughes-Chamberlain, L. C. Powell, A. M. Miller, K. R. Binning, G. C. H. Dorman, W. H. Davies, W. K. Sutton, P. B. Hunter, and H. N. Nowell.

To be Temporary Second Lieutenants for duty with the R.F.C.; May 6th, 1916: Sgt. Edward R. Mackey, from Motor Machine Gun Service, Trooper Kenneth Capel, from 6th Light Horse R., Australian Imperial Force. Trooper Graham C. Body, from 6th Light Horse R., Australian Imperial Force.

Supplementary to Regular Corps.—To be Second Lieutenants (on probation); May 6th: Alexander D. Spiers and Charles L. de Beer.

The following appeared in a supplement to the *London Gazette* issued on the 15th inst.:—

Flying Officers.—Second Lieut. (Temporary Lieut.) E. F. W. Cobbold, Ches. R. (T.F.); April 14th, 1915. (Substituted for the notification in the *Gazette* of May 7th, 1915.) April 25th, 1916: Temporary Second Lieut. J. S. Barnes, Res. R. of R. H. Gds., and to be transferred to the General List. Second Lieut. L. C. Boyd, Special Reserve; Second Lieut. G. E. Hewson, Special Reserve. April 30th, 1916: Lieut. G. M. Churcher, R.A. Temporary Second Lieut. R. P. Willock, Oxf. and Bucks. L.I., and to be transferred to the General List. Temporary Second Lieut. W. F. L. Castle, General List. Second Lieuts. (Special Reserve) J. H. Ross, C. H. Cox, W. O. Phillips, W. J. M. Tomson and E. H. Johnston. Second Lieut. D. H. MacIntyre, Arg. and Suth'd. Highrs., and to be seconded.

From Flying Officers (Observers).—Temporary Second Lieut. S. G. Ridley, General List; April 25th, 1916. Temporary Second Lieut. R. Chadwick, General List; April 30th, 1916.

Flying Officer (Observer).—Temporary Lieut. R. G. H. Adams, Midd'x R.; April 25th, 1916. (Substituted for the notification in the *Gazette* of May 10th, 1916.)

Supplementary to Regular Corps.—Second Lieutenants (on probation) are confirmed in their rank: W. O. Phillips, C. H. Cox, W. J. M. Tomson and E. H. Johnston.

To be Second Lieutenants (on probation): Leonard S. Newns; April 29th, 1916. Frederic A. Harper; May 16th, 1916.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.	£	s.	d.
Total subscriptions received to May 10th, 1916...	10,647	0	4
Subscribed by the Ratings at the Royal Naval Air Station, Killingholme ...	6	13	6

Total, May 16th, 1916 ... 10,653 13 10
166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

* * *

Petty Officers C. BREWE, A. P. JAMES, A. JACK, and F. KERCHY.

Petty Officer Mechanics A. E. CLOSE, A. E. PLATFORD, and T. J. E. THORNTON.

Railway Lights and Raids.

The following was issued by the Press Bureau on the 12th inst.:—

"As the result of recent extensive and special experiments, the Field-Marshal Commanding-in-Chief Home Forces has issued through the Railway Executive Committee special instructions with regard to the working lights which are to be normally maintained on railways, as well as to the further reduction of these lights, and the action to be taken by railway companies on the occasion of raids by hostile aircraft.

"These instructions provide for the reduction of railway lights, other than signal lights, in districts threatened by hostile aircraft, to the minimum necessary for the continuance of traffic which in the national interests it is important to maintain under all conditions.

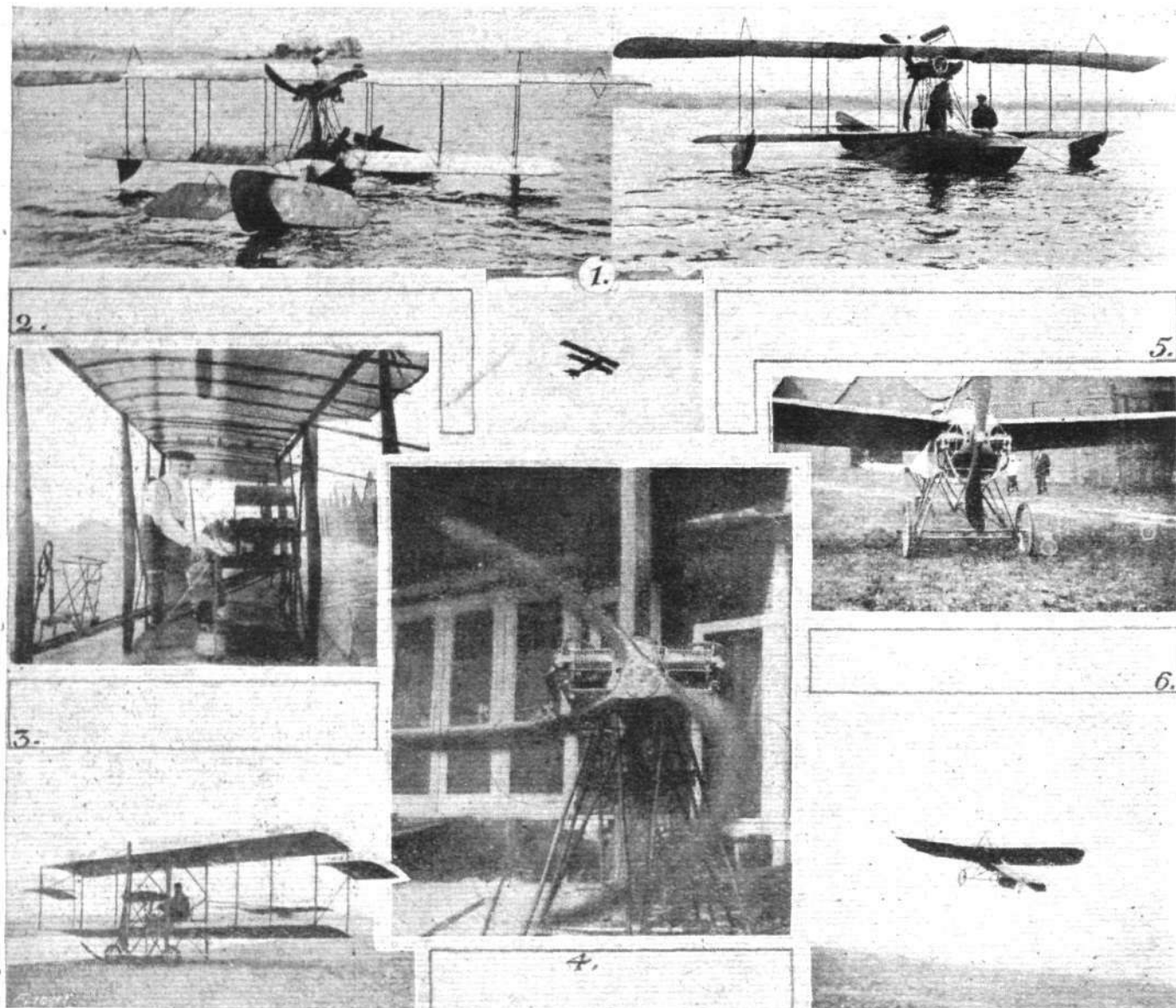
"Subject to the above necessity, railway establishments and trains actually running will be rendered as inconspicuous as possible."

A SUCCESSFUL AMERICAN AEROMOTOR.

IN "FLIGHT" for August 27th last we described and illustrated the Ashmusen aeromotors, and this week we give a series of illustrations showing this interesting engine in active service. It will be remembered that the main features of the Ashmusen motors are its horizontal opposed cylinders with their unique system of cooling. In connection with the latter no fans, blowers, or radiators are required, as a number of air flutes are disposed longitudinally around each cylinder, through which flutes air

equally adaptable for tractor, pusher, or chain-driven machines. It is not necessary to remove the engine from the machine for examination, for it is possible to take the engine apart for the inspection of the cylinders, pistons, bearings, &c., in about twenty minutes, and re-assemble in about twenty-five. Another advantage claimed for the Ashmusen motors are their freedom from vibration.

The accompanying illustration shows a few of the



THE ASHMUSEN AEROMOTORS IN ACTIVE SERVICE.—1. Views of the Stephens flying boat with 12-cyl. plant. 2. The original 8-cyl. plant installed in a Curtiss-type pusher biplane. 3. Tractor biplane built for testing Ashmusen engines. 4. A 12-cyl. plant in operation on the testing stand. 5 and 6. Two views of the Antonelli monoplane with 8-cyl. plant.

is drawn by the carburettor. This not only cools the cylinders equally, but provides warm air for the explosive mixture, enabling a low grade of petrol to be used. Other features of this engine are that all cylinders, heads, pistons, connecting rods, valves, springs, &c., are interchangeable to any corresponding part of either engine—the 70 h.p. 8-cylinder or the 105 h.p. 12-cylinder. The engines can be set to turn in either direction, and are

American machines that have been fitted with Ashmusen motors, viz.:—A 105 h.p. 12-cylinder in the Stephens flying boat, the original 8-cylinder 70 h.p. power plant installed in a Curtiss-type pusher biplane, in the Antonelli monoplane, and in the tractor biplane specially built for testing these engines and flown by H. W. Ashmusen. One of the 12-cylinder power plants is also shown in operation on the testing stand.

SOME THOUGHTS ON FUSELAGE CONSTRUCTION.

WHEN aviation was in its infancy, and the problem arose how to support the tail planes on a machine of the tractor type, the form of construction that first suggested itself was naturally the girder type. When a little more was learned of the importance of reducing head resistance, the next step just as naturally was to cover part or the whole of the body with fabric. As time passed, the outside shape of the *fuselage* approached more and more towards an approximate streamline form, aided later on by the addition of a superstructure of formers and stringers to the square section body. But the girder type of construction was still retained as a general rule, although there were isolated exceptions, such as certain types of Deperdussin and Blériot monoplanes.

While the girder *fuselage* was well enough in its time when orders were not forthcoming in sufficient quantities to warrant laying down an expensive plant for the production of other forms, and when, moreover, every machine was more or less by way of an experiment, and alterations or repairs were matters of frequent occurrence, it would appear that the time has come when the question of other methods of building aeroplane bodies might, and indeed should, be studied with advantage.

Before ruthlessly scrapping the old and proved type in favour of new and untried ones, it might be well to point out some of the disadvantages that form the *raison d'être* for discarding it and seeking a better form. In the first place, the initial manufacture of the component parts of such a *fuselage* is a comparatively slow procedure. Two different methods are in general use: Either the *longerons*, or rails, as they are frequently called in order to substitute an English word for the French that came to be so largely used in the early days of aviation, are made to taper from front to rear, or the overall section is kept the same throughout their entire length, and the unnecessary weight spindled away in the bays to the rear of the pilot's seat. Each method has its disadvantages from the point of view of quick and consequently cheap production. Tapering the top and bottom rails from the back seat to the stern post necessitates a variation in the size of all the fittings that connect the rails with the struts and cross-members. Having the fittings of one bay of a different size from those of adjoining bays means extra expense in manufacturing and frequently also delay in erecting. Further, when the rails taper towards the rear, struts and cross-members usually do the same. On the other hand, if the rails are left of the same overall section throughout they have to be spindled, but as it is generally thought desirable to leave them solid where occur the attachments of the body struts, the spindling process is complicated through having to lift away the rails at these points. We are aware that this intermission is not of very serious moment, but all these things begin to count up by the time they are all added together. Assuming that all the component parts, such as rails, struts and fittings have been made, the question of erecting and tuning up arises. This is an operation requiring no small amount of skill and occupying a very considerable amount of time. In fact, it appears to us that it might quite conceivably be found that the cost of erecting alone would come quite as expensive as that of actual manufacture. In addition to the drawbacks already enumerated, and which are more directly connected with the constructional and commercial sides of the question, there is the aspect from a military point of

view. It is fairly obvious that if one of the members in the girder structure of a *fuselage* is severed by a projectile the strength of the whole structure is seriously impaired. If the member in question be one of the struts the aviator may be able by careful piloting to regain his own lines, but if one of the rails is damaged or broken it would appear that Dame Fortune would have to take a very special interest in the unfortunate pilot to enable him to even reach the ground safely. Quite apart from the question of speed and cheapness of production, this last-mentioned danger inherent to the girder-type aeroplane body should at the present progressive stage of aeronautical engineering be sufficient reason for an attempt to find a more satisfactory solution.

Before going any further, it may be well to look around and see what has been done elsewhere. In France, as has already been mentioned, a few firms experimented with the *monocoque* type of body. Those built by Mons. Blériot were, we believe, made of a special composition, the chief ingredients of which were, if we remember rightly, paper pulp, silk, glue, together with a number of others. These bodies, while proving very satisfactory both constructionally and aerodynamically, were very expensive to make, and they never came into general use. For some of the monoplanes designed for very high speeds the Deperdussin firm built bodies made up of three thin layers of tulip wood, each layer of strips being laid on so as to form an angle with the strips of adjoining layers. When the glue joining the three thicknesses of wood had set, the former over which the *coque* was built was removed, and the inside and outside of the resulting shell was covered with fabric glued on and doped. The thickness of the shell of the complete body was only about $\frac{1}{8}$ of an inch, and therefore quite light. Both as regards head resistance and strength of construction, as well as immunity—or practically so—from breakage when perforated by bullets in a number of places, this type of body was extremely good. It is evident, however, that as regards cost of construction this method must prove highly expensive. The work of fitting the various strips so that they form neat joints and so that no two joints occur immediately over one another is one requiring both skill and time, two of the most important factors against cheapness of production.

In Germany several of the best known firms, notably the Albatros, made a form of compromise between the girder type body and the true *monocoque*. In the Albatros machines the longitudinal rails and the struts and cross-members were—and are in the most recent types, for that matter—retained, but the wire bracing and fabric covering of the girder body were supplanted by a thin covering of three-ply wood screwed to the rails and struts. As regards cost of production, the Albatros type of body would probably compare favourably with the *monocoque*, but would, we should think, be slightly more expensive than the girder. The same would more or less hold good with regard to strength after being pierced in places. In other words, it would not be so strong as the *monocoque*, but stronger than the girder.

The last form of construction to which we should like to call attention is one which has never, so far as we know, been tried on aeroplanes, but which will, to our way of thinking, ultimately prove to be the solution of the problem. This is the all-metal shell type of body. This form of construction would have the advantages of the good stream-line form of the *monocoque* wood body,

and the same or possibly an even better resistance to bending and twisting after perforation by projectiles. When it comes to the question of cost and rapidity of production, the metal body would be at a great advantage seeing that it could be stamped out of thin sheet metal. When contemplating the construction of such a metal body, the first question that would naturally be asked is what the weight is going to be. In order to give an idea of the possibilities of various forms of construction, we have worked out the following approximate weights of the three types. We shall take for purposes of comparison a body of circular section, not because this is necessarily the most suitable for a fuselage, since from practical considerations it might be advisable to make the section elliptical with its major axis vertical, but in order to facilitate calculation of superficial area. It will be assumed that the body is to have a length of about 17 ft. and a maximum diameter of 3 ft. This may seem an excessive diameter for the length, but it should be remembered that for a girder type body, the main structure of which is of rectangular section, stream-lined with formers and stringers, an external diameter of 3 ft. only leaves a width and depth of about 2 ft. inside the body. Using the empirical formula given by Mr. F. S. Barnwell in his paper on aeroplane design, a formula which appears to approximate very closely to the weights of girder-type aeroplane bodies, we have $W_b = .057 l^3 b d$, where l is the length of the body, b and d respectively the width and depth (mean). Allowing 2 ft. for mean depth and breadth and substituting, we have $W_b = .057 \times 17.25^2 \times 2 \times 2 = 67.8$ lbs. Now, taking this figure as a base for calculation of the thickness which it is possible to make, weight for weight, *monocoque* bodies of various materials, we will consider the three-ply body first. The superficial area of a body of the dimensions chosen is approximately 121.8 sq. ft. or 17,539.2 sq. ins. Taking the weight of three-ply wood as .025 lbs. per cub. in., we have $17,539.2 \times .025 \times X = 67.8$, from which $X = 0.15$ in., or approximately $\frac{3}{16}$ in. The strength of three-ply wood

of this thickness, both for bending and twisting, should be ample; in fact, it would appear that even thinner wood might be used, thus effecting a saving in weight.

Next let us examine what would be the weight of a body of the same dimensions made of steel. Taking the weight of a cu. in. of steel as .283 lbs., we have $17,539.2 \times .283 \times X = 67.8$, from which $X = 0.013$ in., or about 29 standard wire gauge. This is, of course, a very thin shell, and whether such a light gauge would be sufficiently strong for the work for which it was designed is a matter for experimental determination. We are inclined to think, however, that it will be found that for ordinary purposes a slightly heavier gauge would be advisable. This could be attained for practically the same weight by reducing the width of the body, since a 3 ft. diameter is rather excessive for a *coque* type of body. By reducing the width to about 2 ft., the saving effected would allow of employing a slightly heavier gauge. The advantages of a body stamped out in two halves bolted or riveted together are obvious. Once the proper dies have been made the cost of production and rate of output would compare very favourably with those of the girder type body.

If it were found that steel was too heavy for the purpose some other metal might be employed, as, for instance, Duralumin. The weight of a cubic inch of this is about .1 lb., so that a body made of this material could be made of a thickness of 0.03 in. for the same weight as that of a girder body. As we said at the beginning of these notes, we feel sure that the time is coming, if it has not already arrived, when methods of aeroplane construction, different from those now generally employed, must be given consideration, and we are inclined to think that once the experiment has been tried by some manufacturer sufficiently far-seeing to realise the possibilities of applying some of the methods of other branches of engineering to aircraft construction, great strides will be made towards the ideal of quick and cheap production.

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Wilbur Wright Lecture, 1916.—The Fourth Wilbur Wright Memorial Lecture will be delivered on Tuesday, June 6th next, at 3 p.m., in the Theatre of the Royal Society of Arts, John Street, Adelphi, W.C.

The title is "The Life and Work of Wilbur Wright," and the lecturer Mr. Griffith Brewer, A.F.Ae.S.

The Right Hon. The Lord Montagu of Beaulieu will preside.

Tickets will shortly be available for distribution from the offices of the Society, 11, Adam Street, Strand, W.C., to which address applications should be made.

Edward Busk Studentship in Aeronautics.—Applications will shortly be invited for the above Aeronautical Research Studentship. The approved scheme provides that the award and control of the Studentship are to be in the hands of a Committee, of whom three members are appointed biennially by the Aeronautical Society and three by King's College, Cambridge (Edward Busk's old college), with two of the Trustees of the Fund. The remuneration of the student will be at a rate not exceeding £150 per annum for a period of one year, with an extension in special circumstances to two years. The student will be elected by the Committee without examination, and shall not have completed his twenty-fifth year on the 1st day of October preceding the election.

The student will be required to make report to the Committee on his work from time to time, and at the close to present a full report to the Aeronautical Society, the University of Cambridge and the Trustees, and he may be required to deliver a lecture or lectures embodying the substance of the report.

The intention of the founders of the Studentship is that it should be primarily for the purpose of encouraging and helping young aeronautical engineers to make a good start on their career.

Enquiries should be addressed to the Secretary, Aeronautical

Society, 11, Adam Street, Strand, W.C., from which address application forms will shortly be procurable.

Annual General Meeting, 1916.—The Annual General Meeting of the Society will take place, as last year, immediately preceding the Wilbur Wright Lecture.

AGENDA.

To receive and approve the Report of the Council on the state of the Society, and the balance sheet of Aerial Science, Limited.

To discuss and determine such questions as may be proposed by the voters relating to the affairs of the Society, and to fill the vacancies on the Council for the ensuing year. Any voter desirous of proposing any subject for discussion at the Annual General Meeting shall give notice in writing to the Secretary, which shall be received by him by noon on May 23rd, 1916.

The retiring Members of Council are:—

Harris Booth	Maj.-Gen. R. M. Ruck, C.B.
J. H. Ledebour	R.E.
Lieut. A. R. Low, R.N.V.R.	Dr. T. E. Stanton, F.R.S.
F. K. McClean, Squadron-Commander	Lieut.-Col. F. H. Sykes
	Dr. R. Mullineux Walmsley

who are eligible for re-election.

Nominations of candidates for election to the Council shall be signed by the voters proposing them (two voters and no more), and must be received by the Secretary by noon on May 16th, 1916, with an intimation in writing by the voters nominated that they are willing to serve.

The Council will also ask for approval of their action in postponing, on account of the war, the date of the Annual General Meeting.

By order of the Council,
BERTRAM G. COOPER, Secretary.



ARMCHAIR REFLECTIONS

BY THE "DREAMER"



For King and Country.

It is some three years now since I first penned these reflections, and endeavoured to the best of my poor ability to ring the changes from grave to gay. Sometimes I have, perhaps, been rather personal, though I have I think, and hope, made few enemies. Sometimes I have appeared in lighter vein, and made fun at the expense of my friends. Sometimes it has been my unfortunate duty to write of those taken suddenly from us.

To look over back volumes of "FLIGHT" is always, to me, a rather melancholy proceeding, for there I read of and see pictures by pen and camera of those no longer in our midst.

Always I am drawn to that little half-page in current numbers of "FLIGHT" headed "Personals," and always I read it carefully, with respect, and in sorrow. Yet could I wish that the final S were left out, for that which I read is personal to myself; I read of episodes in the life of my brothers in aviation.

All those of whom I read are not known to me personally, aviation is now far too large a business for that to be possible, yet even those are my friends in the abstract. Many I could claim as acquaintances, some are personal friends.

I approach "Personals" with that feeling of reverence we all have when passing through the church porch on our way to service. There are the coming weddings which I shall read of only with mild interest, because most there mentioned are not known to me. I read of those sorely wounded in battle, with pity in my heart and a hope that they may recover quickly from their honourable hurt, received in their noble work for the defence of civilisation. But also I read of those who have fallen in the great fight, fallen to rise no more. And I think of them in their soldier's grave out there in some shell-torn valley, where the rough wooden cross, fashioned by loving hands, marks their resting-place. And my sympathy goes out to those who will read in this half-page of "Personals" that which will wring their heart far deeper than it can mine, for they will read of brothers, and sons, and husbands.

This week I read of Major V. A. Barrington-Kennett, previously reported missing, now unofficially reported killed. And I feel for his gallant father, Lieutenant-Colonel Barrington-Kennett, who by this death loses his third son in this war, leaving but one of four brothers fighting for their King.

Poor "B.-K.," he was everybody's friend, and it grieves me that I shall never again see him stalking the plain at Salisbury, with a cheery word for all. Perhaps I, though humble and unknown, may yet be permitted to offer to his family my sincere condolences, and express the wish that at least the surviving brother may be spared to them.

War is War.

At the beginning of the war there were those amongst us who, more optimistic than the average, gave it as their opinion that Germany was the greatest bubble unpricked. Well, we are still pricking, and the gas seems

to escape comparatively slowly. I myself, gave it as my opinion (though why I should have presumed to have any opinion at all, I cannot now understand) that it would be all over in twelve months. Now, after twenty-two months of fighting, I would not care to venture an opinion as to the date of the final act.

I do think, however, that before that final act is played, aviation will take a more active part in things than it has done up to now, great as that has been.

As a fighting machine, I feel that both ourselves and Germany have been more or less feeling the way with the aeroplane. It was at the commencement of hostilities an untried service, and I think neither side looked upon it but as an accessory. There was a feeling that it could do great things, but always there was an inclination to use it carefully, to keep it well covered, to take as little risk as possible, to not look upon it as war material to be used up.

I am afraid the time is coming when aeroplanes and pilots will have to be taken as war material to be used: when squadrons of machines will have to be used against enemy strongholds and other objectives without thought of any but the lucky few returning.

It would be strange, if it were not so new, to read after each raid "All our machines returned safely," or "Unfortunately two of our machines failed to return."

When a great battle is fought, or an enemy trench or village stormed, it is done with the deliberate intention of some gain, and the cost in men and material is something that has to be borne. No charge is ever made with the thought that it can be carried through without losing men. It is done because it has to be done, and although all conditions are thoroughly thought out, and the way prepared beforehand, there is not the slightest doubt but that when the charge comes to be made, it is made with those forming the unit looked upon as material of war to be used up for certain gains.

In the same manner will our aeroplane squadrons be working before the end of the struggle, in my opinion. Raids will have to be made on enemy airship sheds, and they will be made more with a view to their destruction, than with a view to the preservation of our flight of destroyers.

No longer will bombs be dropped from great altitudes, trusting more or less to luck for a hit in the right place, but the machines forming the attack will, on reaching their objective, plane down to point-blank range, striking with certainty, destroying absolutely that which they set out to destroy. Anti-aircraft guns will not be taken into account. Enemy aeroplanes will be ignored. The object wished for will have to be attained, even though not a single machine return.

It is distressing to have to even think these things, but war is war, and men at war are but material of war, to be used up. In no other way can the objective be obtained.

This being so, I hope the committee of enquiry just formed will get to work and give their verdict in double quick time. Don't hang up the output.

FROM THE BRITISH FLYING GROZINDS

London Aerodrome, Collindale Avenue, Hendon.

Beatty School.—The following pupils were out during last week: Messrs. Schollaert, Jaquin, Tjaarda, Atkin, Gliksten, Smith, Cuthbert, Barrow, Mossop, Gaskin, Hoskins, Roberts, Knox, Brewerton, Phillips, Earl, Skeet, Dowding, Davy, Garlick, Kay, New, Drewery, Jones, Venables, Towson, McPherson and Mitchell.

The instructors were Messrs. G. W. Beatty, G. Virgilio, H. Sykes, A. E. Mitchell and H. Fawcett, the machines in use being Beatty-Wright dual-control and single-seater

Royal Aero Club Certificates have been taken this week by Messrs. G. F. Creaghan, C. Crawford, and Lieutenant F. T. Woods.

Ruffy-Baumann School.—Pupils with instructor last week: Messrs. Wilson, Car, Fraser, Dobson, Edgar, Fanshawe, Maya, Bailey, Straus, Di Balme, Portella, Torres, Johnstone, Westlake and Williams. Straights or rolling alone: Messrs. Whitaker, Bailey, Williams, May, Hoskyns, Fraser and Winter. Eights or circuits: Messrs. C. W. May and Hoskyns.



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Some Hall Flying School pupils who have recently secured their Royal Aero Club certificates at Hendon.—1. Lieut. F. H. Cooke; 2. Mr. C. W. Cook; 3. Mr. W. D. Thom; 4. Mr. E. J. Arnsby.

propeller biplanes and Caudron dual-control and single-seater propeller biplanes.

Mr. H. W. Sellars took his certificate on Wednesday.

Hall School.—The following pupils were out receiving instruction last week:—With P. G. Allen: Armitage, Gaskell, Collier, Robinson, Deane, Illingsworth, Dickson, Rayne, Rand, Le Grice, Russell, Graham Davis and Gudge. With C. H. Bell: Glegg, Halliday, Smith, Duncan, Mahoney and Hooker. With C. M. Hill: Taylor, Le Grice, Rochford, Rand, Pennell, Gaskell and Chapman. With H. F. Stevens: Gainsford Dodds, Mahoney and Cosgrave.

Hall and Caudron Government type tractors in use.

London and Provincial Aviation Co.—Pupils doing rolling last week: Messrs. Evernden, Birkbeck, Whittingham, and Daly. Doing straights: Messrs. Dawson, Pulford, Moore, and Morley Kent. Circuits and eights: Messrs. Creaghan, Woods, Crawford, and Egelstaff.

Instructors: Messrs. W. T. Warren, M. G. Smiles, W. L. Hay, and W. T. Warren, jun.

Instructors: Messrs. Edouard Baumann, Felix Ruffy, Ami Baumann, André Thomsen and Clarence Winchester.

50 and 60 h.p. Ruffy-Baumann tractor biplanes in use.

Bournemouth School.

Pupils rolling alone last week: Messrs. Kennedy, J. L. Barlow, Brandon, Gordinne, Pritt, Scaramanga and Daniel. Doing straights alone: Messrs. J. Wilson, O. Wilson, Morley, Morris, Adamson and Smith. Figures of eight and circuits alone: Mr. Frank Simpson.

Instructors: Messrs. S. Summerfield and E. Brynildsen. 35 h.p., 45 h.p. and 60 h.p. Caudrons in use.

Quite a lot of flying was got in during the week by Mr. Simpson, who is now quite ready for his ticket. Owing to the boisterous weather on Saturday, Mr. Summerfield did not make his usual exhibition flights until rather late in the evening, nevertheless he made very good flights under very trying conditions.

Bombs from Hostile Aircraft.

NEW regulations, made under the Defence of the Realm Act and published on May 10th, provide that "any person, having found any bomb or projectile or any fragment thereof, or any article whatsoever which he believes or suspects to have been dis-

charged, dropped, or lost from any aircraft or vessel of the enemy, neglects forthwith to communicate the fact to a military post or to a police-constable in the neighbourhood, or on being so required neglects to send or deliver the same to the competent military authority or some person authorised by him for the purpose, he shall be guilty of an offence against these regulations."

QUESTIONS IN PARLIAMENT.

British Aeroplanes at Kut.

MR. JOYNSON-HICKS, on May 10th, called attention to the German reports as to the shooting down by the Turks of old British aeroplanes endeavouring to get food into Kut, and asked whether these aeroplanes were some which did reconnaissance work in the Sinai district, but were so bad that they were transferred from there to Mesopotamia more than a month ago.

Mr. Tennant replied that a recent Turkish *communiqué* stated that the dropping of food by aeroplanes at Kut had ceased. The General Officer Commanding in Mesopotamia reported that between April 11th and 29th British aeroplanes of the Royal Flying Corps and the Royal Naval Service had dropped at Kut 18,000 lbs. of food, besides quantities of medicines, stores, and materials. No aeroplanes in Egypt or the Sinai district were sent to Mesopotamia, though some of the *personnel* were. During these operations there were numerous aerial combats, in one of which a British seaplane was driven down into the enemy's lines, the observer being killed and the pilot wounded. In another case the pilot was wounded, but succeeded in landing safely behind the British lines. These were the only casualties during the operations. The House would see that the reports to which attention had been drawn were characteristic German reports.

Mr. Joynton-Hicks: In view of these "characteristic German reports," would it not be for the benefit of the entire nation if the right hon. gentleman would make on occasion some such satisfactory statement as he has just made?

Mr. Tennant: I will take the suggestion into consideration.

The R.F.C. Inquiry.

IN the House of Commons, on May 9th, Sir A. Markham asked why four lawyers had been nominated out of six on the R.F.C. Inquiry.

The Prime Minister replied that he understood that, in view of the possibility of legal proceedings, it was very desirable that lawyers should be nominated.

Mr. Billing asked if it was not advisable at least to invite some aeronautical experts to join?

The Prime Minister: Two members of the Committee are civil engineers of eminence.

Mr. Pemberton Billing: Are those civil engineers acquainted in any degree with the requirements of a flying machine, or whether or not a flying machine designed by this country is fit to meet those of the enemy?

The Prime Minister: No engineer in this country excels Sir Charles Parsons in his knowledge of these things.

On May 11th, Mr. Billing asked which members of the Judicial Committee are possessed of technical knowledge of aeronautics; and whether he will appoint to that committee a sufficient number of men of aeronautical experience as will give public confidence in the findings of the committee?

The Prime Minister referred Mr. Billing to his previous answer, to which he had nothing to add.

Mr. Billing asked when the House will have an opportunity of discussing the composition of the Judicial Committee set up to inquire into the Air Services?

The Prime Minister: No, Sir. I have no reason to think there is any general desire for such a discussion.

Mr. Billing asked why, in view of the fact that the criticisms and allegations of the Member for East Herts applied equally to the R.N.A.S. and the R.F.C., the terms of reference of the Judicial Committee are limited to the Royal Flying Corps; and will the Government so amend the terms of reference as to include the entire service?

The Prime Minister: I have read the speech of my right hon. friend in which he promised to ask for a judicial inquiry. It is clear that this inquiry was to be made into the relation between the casualties in the Royal Flying Corps and the character of the machines with which the Army pilots had been provided. The charges of murder were made against the Army, not the Navy. In any case, after consulting the First Lord of the Admiralty, I do not propose to extend the scope of the judicial investigation.

Mr. Billing thereupon gave notice that he would raise the whole question of the Committee of Inquiry on the first opportunity on the adjournment of the House.

The Armoured Car Division Transfers.

IN the House of Commons on May 11th Commander Bellairs asked the First Lord of the Admiralty whether officers and men who served in the Armoured Car Division, which was a part of the Royal Navy Air Service and remained in that service after the division was disbanded, have been informed that seniority in the Air Service will only count from the date of the disbandment of the Armoured Car Division; and, if so, whether he can see his way to

reconsider a decision which inflicts hardships on officers and men who have gone through arduous and dangerous service in Gallipoli and in France?

Dr. Macnamara replied: The suggestion in the question is not correct as regards officers, who do count their Armoured Car time. The men, however, were receiving such high rates of pay as drivers in the Armoured Car Division that there was no justification for giving them the same rate of pay in the Air Service proper. They were, therefore, given their choice of taking their discharge, going to the Army, or accepting such rates of pay in the Air Service as their qualifications entitled them to. It is, therefore, considered justifiable that these men should be considered as having made a fresh start and their seniority has been reckoned accordingly. This will not interfere with their prospects, as they are only entered for the period of the War, and, in the circumstances of the case, seniority cannot play such a part in determining promotions as it must do in the permanent service.

Warning of Air Raids.

MR. ANNAN BRYCE asked whether any and, if so, what arrangements exist for giving notice to local civil authorities of the approach of hostile aircraft?

Mr. Herbert Samuel: Yes, arrangements for distributing the necessary warnings to local civil authorities have been framed by the Field-Marshal Commanding-in-Chief, Home Forces, with the co-operation of the General Post Office and the police.

Dope.

MR. BOWERMAN asked the Secretary of State for the Home Department whether, in view of the recent fatalities which have occurred from the use of dope in aircraft works, he is aware that private makes of dope free from the poisonous spirit known as tetrachlorethane, and which are claimed to be entirely non-poisonous, are freely advertised, and may presumably be obtained in considerable quantities; and whether the Home Department is prepared to recommend aircraft manufacturers to use these private makes of non-poisonous dope in the meanwhile?

Mr. Brace (the Under-Secretary of State for the Home Office) replied that the Home Office had been in constant communication with the Departments concerned, and he understood that the arrangements which were set on foot some time ago for securing an adequate supply of a satisfactory dope free from tetrachlorethane were now approaching completion. It was hoped that the approved dope would shortly be manufactured in such quantities as to meet all requirements. The use of any other non-poisonous dope must depend on its suitability for aircraft purposes, and this was a matter for the War Office and Admiralty to decide.

R.A.F. Engines.

MR. BILLING asked whether the Royal Aircraft Factory have placed orders for 2,500 engines of their own design; whether, since first placing the orders, over 500 alterations in the drawings have been issued to the manufacturers; whether this design is based upon the successful Renault engine; whether the alterations or alleged improvements have resulted in a wholly inefficient engine; whether the order for 2,500 of these engines was placed before the engine had been proved efficient; whether this large order had deprived other constructors of necessary material, whether, owing to unskillful design, the engine is peculiarly liable to catch fire in the air and so to jeopardise the life of the pilot; whether the Aircraft Inspection Department of the Royal Flying Corps have protested against the employment of this engine; and, if not, whether he will call for a Report on the subject and, if that Report confirms the allegations in this question, will the War Office give orders to stop the construction?

Mr. Tennant replied that the Royal Aircraft Factory does not place orders for engines. There were three different types of engines which had been designed at the Royal Aircraft Factory, and orders for these had been placed by the Directorate of Military Aeronautics. One of these resembled the Renault engine. During the development of these engines many alterations were made in drawings and specifications. Material available for engines must of course be shared between different constructors. The remaining allegations in the question were devoid of foundation.

Chemico-Explosive Incendiary Bullets.

MAJOR CHAPLE asked whether the Minister of Munitions would offer a prize of £10,000 to the inventor of a chemico-explosive incendiary bullet small enough to be fired from a gun mounted on an aeroplane, and having the property of exploding within the envelope of a Zeppelin and setting fire to it?

Dr. Addison replied that the question of perfecting the types of projectile suitable for use against Zeppelins, whether from aeroplanes or otherwise, was constantly before the Ministry of Munitions,

and they had been assisted by many suggestions from inventors. There did not appear to be any occasion for offering the particular incentive suggested.

Mr. King: Have not prizes been offered in connection with other needed inventions, and, if so, why not adopt the suggestion here?

Dr. Addison: The reason is that we receive tens of thousands of suggestions.

The Wrecked "L. 15."

ON Monday Mr. Fell asked whether the steam drifter, YH 87,

in the service of the Admiralty as a patrol boat, found the Zeppelin "L. 15" damaged in the Thames estuary and made a rope fast to it, and took on board the commander and four of the crew of the airship, and held on for an hour, and, if so, would some recognition of an honorary nature be made for this service.

Dr. Macnamara replied that the drifter was one of three patrol vessels to which the Zeppelin surrendered. The conduct of the officers and men of all three was all that could be desired, but the circumstances did not call for any special recognition.

PERSONALS.

UNDER the above heading will be published weekly particulars of a personal character relating to those who have fallen or have been wounded in the country's service, announcements of marriages and other items concerning members of the Flying Services and others well known in the world of aviation. We shall be pleased to receive for publication properly authenticated particulars suitable for this column.

Casualties.

Lieutenant JOHN R. DENNISTOUN, R.F.C., was killed on May 4th in an air fight, falling behind the enemy lines. With his father, Lieutenant-Colonel R. M. Dennistoun, K.C., and his brother, Captain James A. Dennistoun, he came to England with the First Canadian Contingent as an officer of the Fort Garry Horse of Winnipeg. He transferred to the Royal Flying Corps in January, 1916, having served nearly a year with the 1st Canadian Division at the Front. He was educated at Trinity College School, Ontario, and Trinity College, Cambridge. He played in the University ice hockey team in 1913-14; and was mentioned by Lord French for gallant and distinguished conduct in the field between April 22nd-25th, 1915, when the Canadians were at Ypres.

Lieutenant CHARLES DOUGLAS WHITE, King's Royal Rifle Corps, attached R.F.C., who was killed on May 10th, was the son of the late John White, I.C.S., and the late Mrs. White. Lieutenant White was awarded the Military Cross.

Married and to be Married.

An engagement is announced between Major A. S. BARRATT, Squadron-Commander R.F.C. and Lieutenant R.F.A., son of C. H. Barratt, M.I.C.E., late P.W.D. Punjab, India, and Mrs. Barratt, 16, Apsley Road, Clifton, and NORA LILIAN, youngest daughter of the late E. G. CREW and Mrs. CREW, of Langford Lodge, Clifton, Bristol.

Flight-Lieutenant EUSTACE DE COURCY HALLIFAX, R.N.A.S., fourth son of the late Rear-Admiral John S. Hallifax, of Old

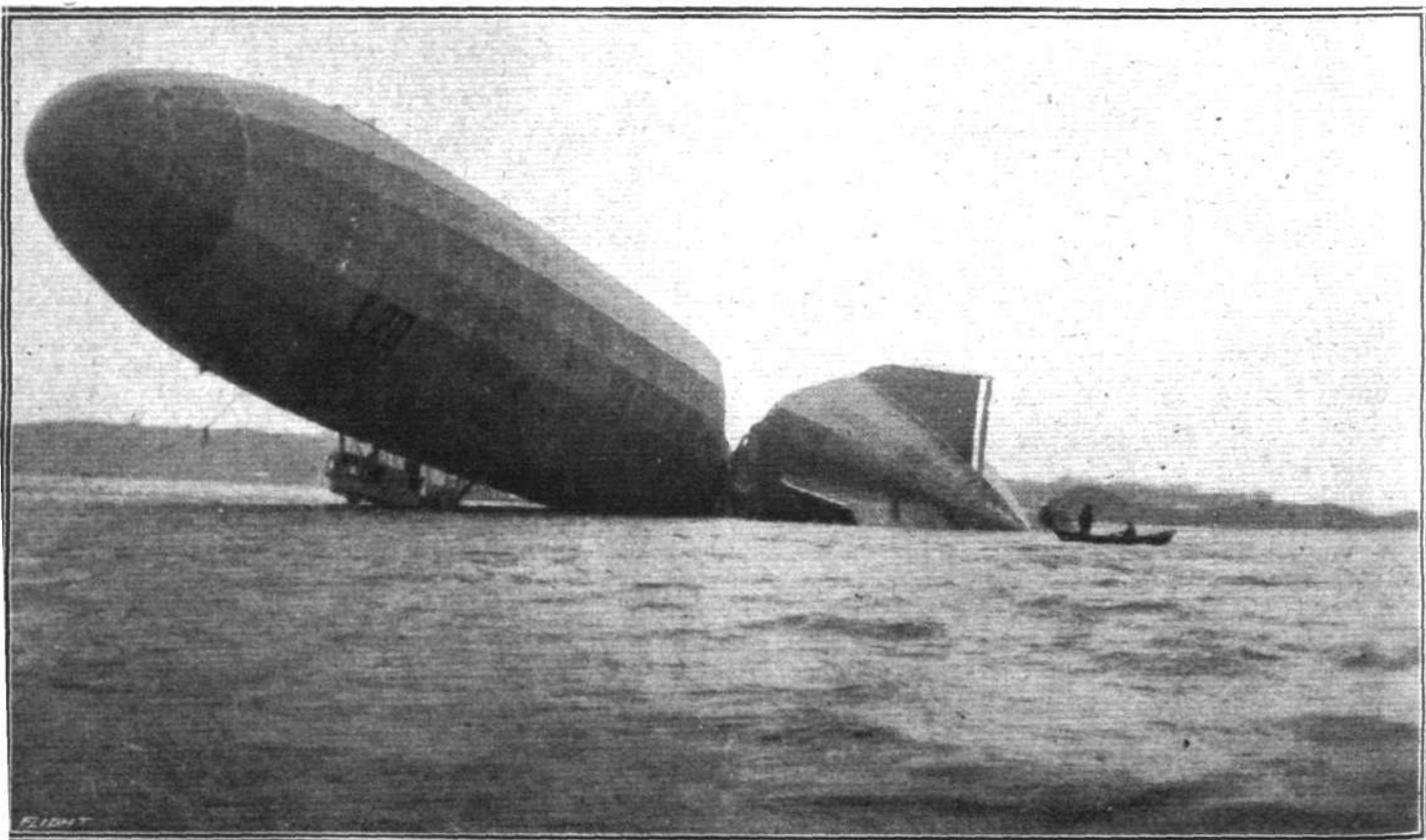
Alresford, Hants, and Mrs. Hallifax, Kingsland House, Shawford, was—at Compton, Hants, on April 29th—married to EDITH, elder daughter of Lieutenant-Colonel H. H. SOUTHEY, late 35th Scinde Horse.

Captain H. GORDON KAYE, K.O.Y.L.I., attached R.F.C., only son of Mr. and Mrs. J. H. Kaye, of Norwood, Huddersfield, was—at Bolton Abbey, Yorkshire, on April 29th—married to WINIFRED (FREDA), elder daughter of the late Mr. W. H. SCALES and Mrs. SCALES, of Verwood, North Park Road, Bradford.

A marriage has been arranged—and will shortly take place—between Captain ALEXANDER MCR. MOFFATT, 7th Argyll and Sutherland Highlanders and R.F.C., son of Alexander Moffatt, Advocate, Sheriff-Substitute of Stirlingshire, Arnotdale, Falkirk, and ALICE MAY, younger daughter of R. W. HERBERT, Ashville, Sunderland.

A marriage has been arranged between LESLIE GILSON NICOLSON, R.N.A.S., only son of Mr. James Nicolson, of Hampstead, and grandson of the late Mr. Thomas Gilson, of Edinburgh, and DOROTHEA, only daughter of Mr. and Mrs. CHARLES BRINDLEY, of Barrowby House, Worksop, Notts.

Flight-Lieutenant BENJAMIN TRAVERS, R.N.A.S., elder son of W. F. Travers, of Mole Cottage, West Humble, Dorking, was married on April 29th to VIOLET, only child of Captain D. B. W. MOUNCEY, Leicestershire Regt., of 38, Elm Park Gardens, and granddaughter of the late Sir James Longden, G.C.M.G.



Zeppelin "L.20," which was wrecked on the Norwegian coast recently, drifting towards the land after the main frame of the gas bag had collapsed and broken in half.

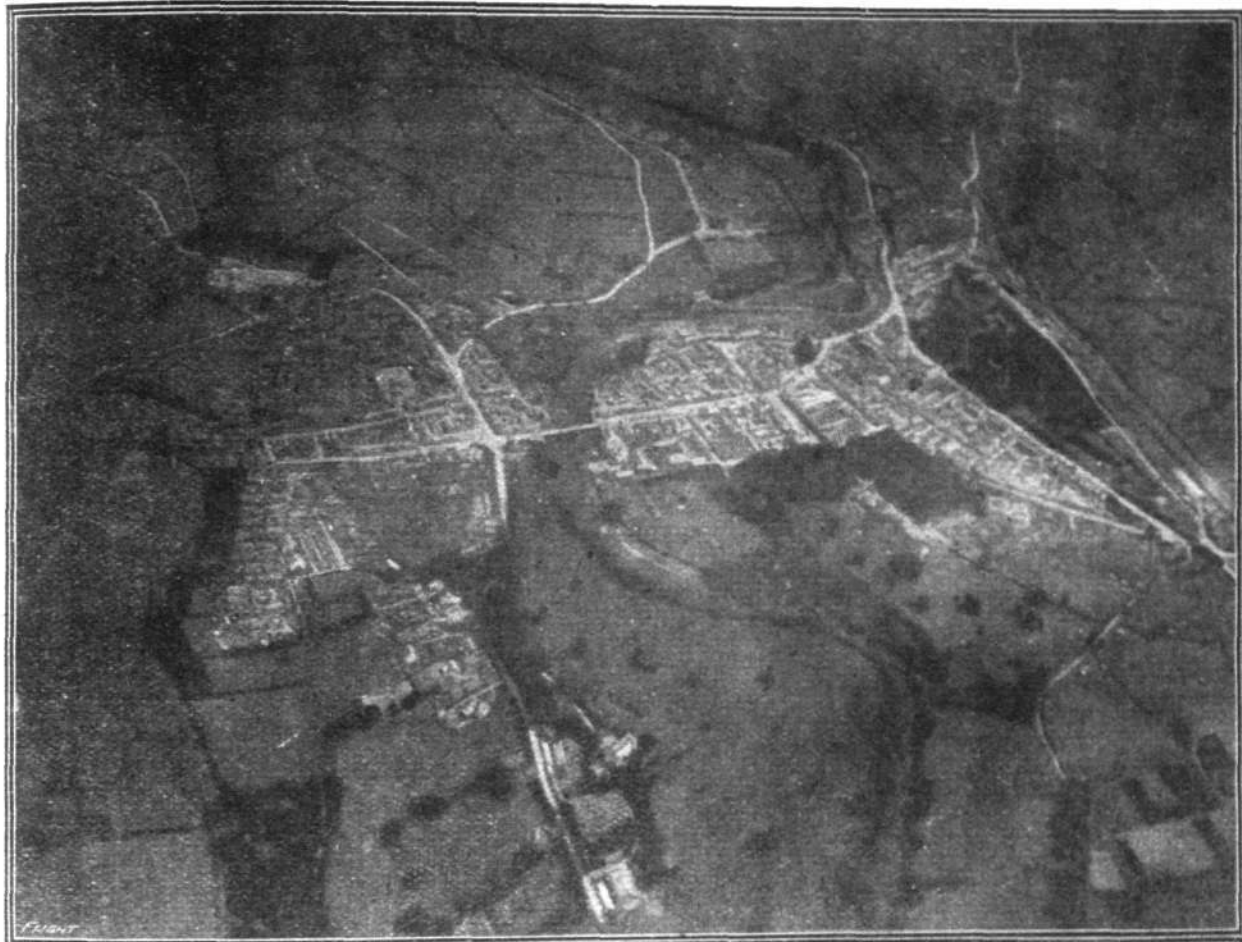
MAY 18, 1916.

FLIGHT

OVER ENGLAND WITH A CAMERA.

AMONGST the firms against whom winding-up orders have recently been made by the Board of Trade under the Trading with the Enemy Amendment Act, 1916, the

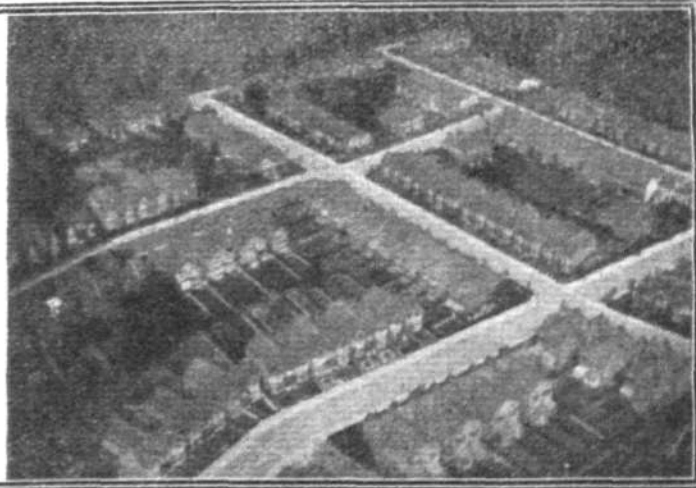
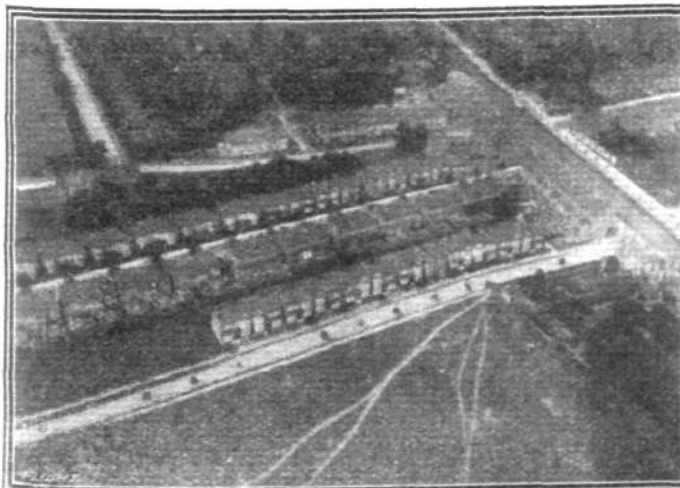
interesting to note that Mr. Gustav P. Stollwerck, who was connected with the German Consulate in this country, was in past years a very keen follower of air



A photograph, from above, of Newtown in Wales, by Mr. Gustav P. Stollwerck.

name of Messrs. Stollwerck Brothers, Ltd., the well-known German chocolate manufacturers, was included. This firm is one of about a dozen others so dealt with by the Government in one batch, and it is

work, although the particular form which his fancy took was spherical ballooning. During the many voyages which Mr. Stollwerck was in the habit of making across country, it was a regular practice to secure quite a number



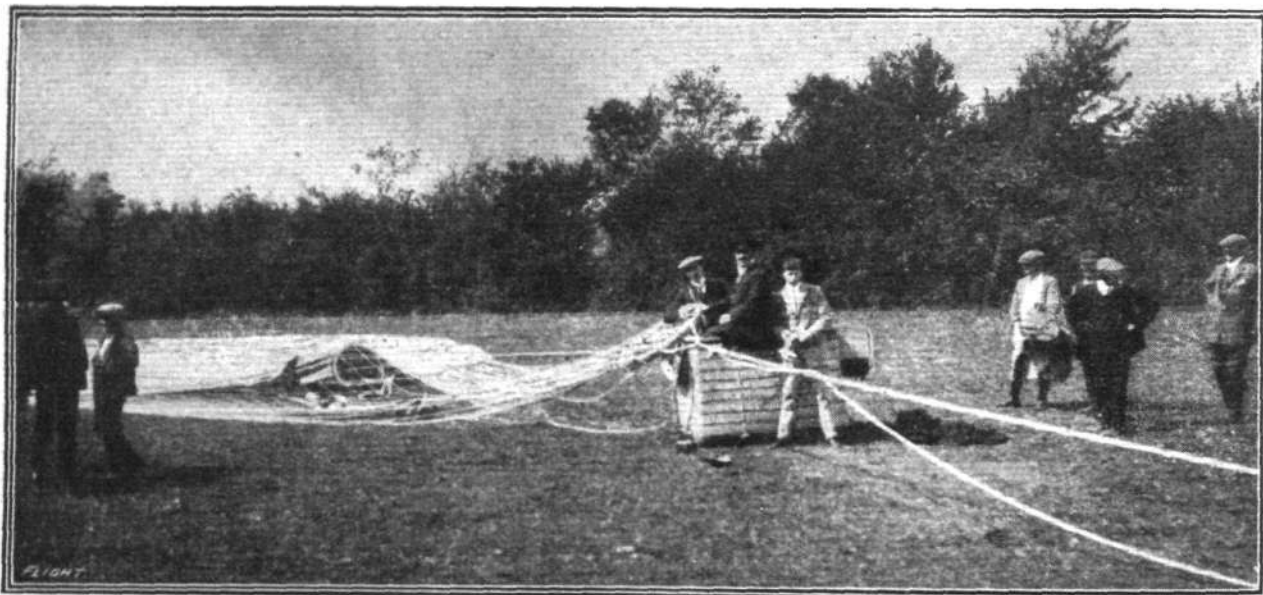
A couple of pictures of Suburbia, taken from Mr. Gustav P. Stollwerck's balloon "Dunlop" in September, 1911. It would be interesting to learn whether these districts are recognisable by any inhabitants familiar with the district, as although usually familiar from the ground, it is quite a different matter to designate a scene, as it is here shown, except with a practised eye.

of photographic negatives from above of all parts of British towns, the country, &c. Consul Stollwerck was usually courteous enough to send us selections from his photographic collection, and amongst others with which he has favoured us were photographs taken during trips of considerable distances in 1911—less than five years ago. For instance, one trip was during August of that year to Newtown, in Wales, with four passengers—a distance of 165 miles, the start being made at three o'clock in the morning, and Newtown reached at 12.5 p.m., giving 9 h. 5 m. for the trip. During another balloon excursion, the "Dunlop" balloon, which was owned by Mr. Stollwerck, went over Maidstone, passing *en route* over South London. Other trips were to Newhaven, near Brighton, and altogether we should say that Mr. Stollwerck must have obtained a very fine series of over-England pictures.

On this page and on page 423 we are reproducing some of the suburbs of London, taken during the journeys to which already reference has been made, and by way of a variety we also give an example of a photograph secured



Another snap, in September, 1911, of another suburban district, from Mr. Stollwerck's balloon.



Mr. Gustav P. Stollwerck and his balloon "Dunlop" after his descent at Newtown in Wales, September 13th, 1911.

over Newtown in Wales, whilst another of our pictures shows a descent made at this latter spot by way of a finish to the trip. In this photo. Mr. Stollwerck is seen in the car of the balloon, before packing up for return to

London. In the pictures of Suburbia it would be interesting to learn if the exact spots depicted are recognised by any of our readers. Their locality was indicated to us by Mr. Stollwerck when sending them.

THE R.F.C. INQUIRY.

THE Committee appointed to inquire and report upon the administration and command of the Royal Flying Corps, met on May 10th, under the chairmanship of Mr. Justice Bailhache, to determine preliminary matters. It was decided to admit the public, but not to hear counsel.

The first meeting of the Committee was held at the Westminster Hall on Tuesday.

The Chairman read the terms of reference as follows:—

"To inquire into and report upon the administration and command of the Royal Flying Corps, with particular reference to the charges made both in Parliament and elsewhere against the officials and officers responsible for the administration and command, and to make any recommendations in relation thereto."

The Chairman then stated that two or three of the gentlemen who had made most prominent charges against the Air Service had been invited to attend in order that the Commission might arrange with them to formulate their charges, and fix a day for proceeding with the inquiry. There had, however, been some misapprehension as to the object and purpose of the meeting, and he gathered that the gentlemen who had been invited would not be present. In these circumstances it would be impossible to proceed with the public

part of the inquiry, and they would sit again for that purpose on Thursday morning.

It would be useful if the Press would circulate that information, and at the same time make it known that they would be prepared to see on Thursday not only the gentlemen whom they had invited, but all persons who had made charges against the Air Service which they desired should be investigated.

The object of the meeting would be that those gentlemen who came should be asked to formulate their charges, and that days should be appointed, as far as possible suiting their convenience, to inquire into the particular charges of which they were responsible.

He would only add that the sitting would be as far as possible public, but it was obvious that a good many things would have to be considered which would need to be inquired into in private. Further, it might be that certain things would come out at the public inquiry which it would be desirable should not be published in the Press.

The Commission proceeded with its work in private.

All communications concerning the inquiry should be addressed to the Secretary, Mr. D. Cotes Freedy, 2, Elm Court, Temple, E.C.

THE RANGE OF FLIGHT AND RADIUS OF ACTION OF AIRCRAFT.

THE EFFECT OF THE WIND ON LONG DISTANCE FLIGHTS.

ONE of the chief reasons for the success of the aeroplane, whether for military or sporting purposes, is its ability to travel over long distances at high speed; but there is one important factor that, under some conditions, may militate strongly against extensive flights—namely, the wind. The effect of the wind may be due to its excessive gustiness or to its high velocity, the effect of the latter being sometimes due to the former, as generally the greater the velocity of the wind the greater are the variations in speed and direction which may occur.

having little bearing at the present day upon the matter under discussion.

The velocity of the wind is also of little importance if it is not necessary to go in a particular direction, since flights have been made on frequent occasions in winds exceeding in velocity the speed of the machine—"Eye-Witness," writing over a year ago, stated that an observer on a fast machine, travelling at full speed, found himself travelling backwards relative to the ground at the rate of 10 miles per hour. Even in landing

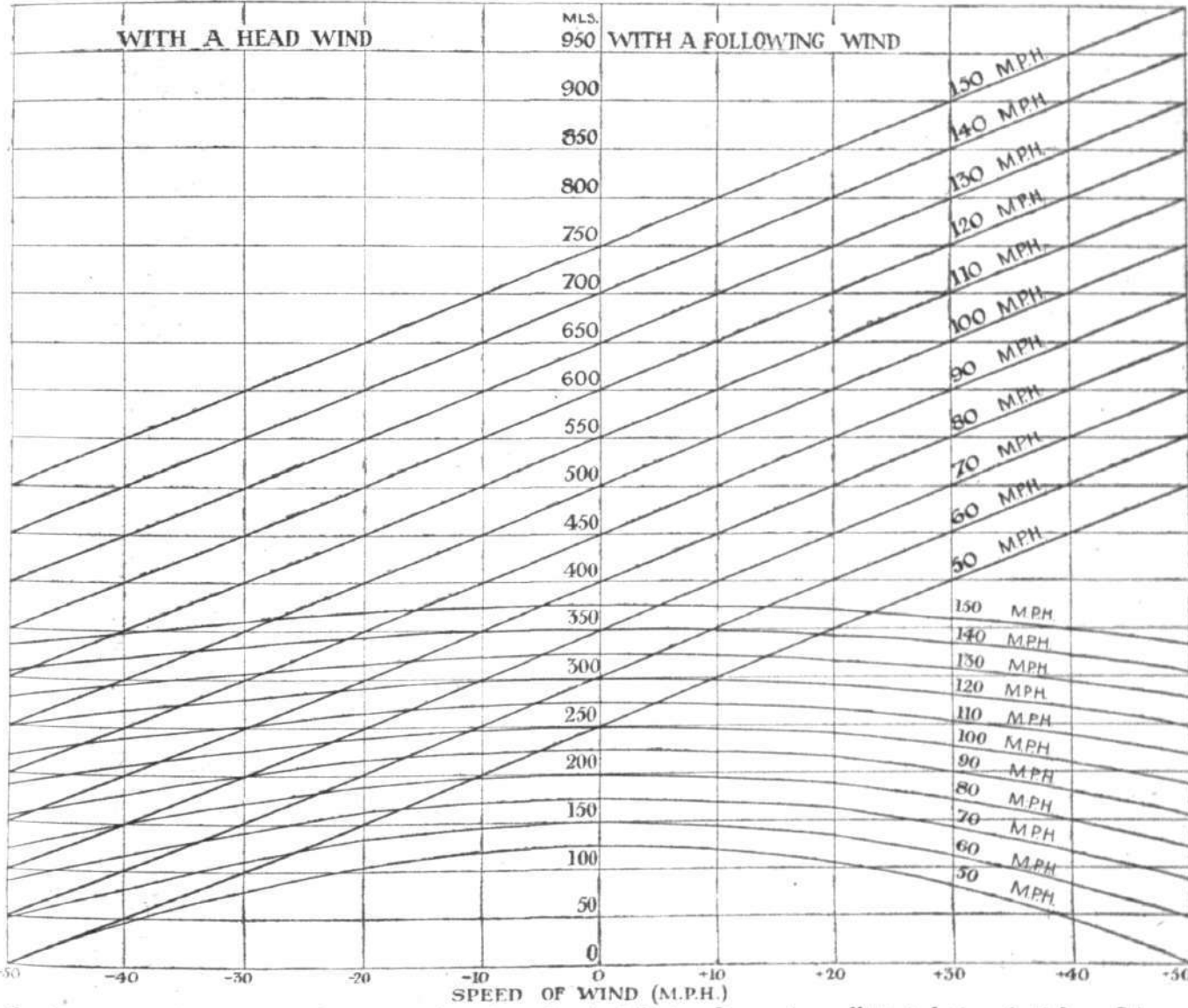


Diagram showing the range of flight and the radius of action of aircraft carrying sufficient fuel and oil for a 5-hour flight when flying in a direction parallel to that of the wind.

As regards the former, the difficulties associated with gusty winds are mainly concerned with safety in flight, and these are being rapidly surmounted, as the direct result of the production of faster aeroplanes, but partly also because of the evolution of machines possessing better flying qualities, greater stability and embodying a stronger construction. Hence, except in so far as they limit the *lowest* speed at which it is safe to fly when such winds prevail, and that they increase the discomfort and mental strain on the pilot, which tend to limit the duration of flight, their influence may be disregarded as

and alighting in high winds, the difficulties at one time experienced have been largely overcome, so that machines can now be brought to rest without running for any great distance along the ground.

As a rule, however, the pilot will require to travel in a certain direction irrespective of the quarter from which the wind may be blowing. Knowledge of the speed and course of the winds at varying elevations and over different localities is very meagre; but balloonists are often enabled to follow a predetermined course by altering the altitude of the balloon so as to take advantage

of favourable currents in the different strata of the atmosphere. Sooner or later a systematic study of this branch of meteorology will have to be undertaken in order that pilots may take proper advantage of the wind, thus saving time, and making for fuel economy and reduced wear and tear.

For the purpose of examining the effect of wind upon the range of flight and the radius of action of aircraft, it has been assumed in the following notes that the direction in which the flight is made is parallel to the direction in which the wind is blowing. The additional assumption has been made that the aeroplane can carry sufficient fuel and oil for a five hours' flight. On this basis, the maximum distance it is possible for such an aeroplane to travel in a straight line and in one direction, with or against the wind, has been calculated for machine speeds varying between 50 and 150 miles per hour, and wind speeds of from 0 to 50 miles per hour; and the results are shown by the straight oblique lines in the accompanying diagram. The ordinates represent the distance traversed and the abscissæ the speed of the wind. The left-hand side of the diagram shows the range of flight where the machine is flying against the wind, and the right-hand side when the direction of flight is the same as the direction of the wind. The effect of wind at low aeroplane speeds is very marked, much more so than at the higher limits of speed.

But in carrying out military operations, it is essential on practically all occasions that the pilot should return to the base whence he started, in order to transmit his report to headquarters. Under these circumstances it may be necessary to fly with and against the wind during the more or less straight flight out and home; and then, with any given fuel and oil capacity, there is immediately established a definite radius of action beyond which it is impossible to go. The summation of the time taken on the outward and homeward journeys must not exceed the duration permitted by the fuel and oil carried.

Let x be the radius of action, a the machine's speed relative to the ground with the wind, and b the machine's speed relative to the ground against the wind.

$$\text{Then } \frac{x}{a} + \frac{x}{b} = 5.$$

The value of a will be the aeroplane's air speed plus the wind velocity, while b will be found by subtracting the wind speed from the air speed of the machine. By substituting the different and corresponding values for a and b , the value of x for various aeroplane and wind speeds may be determined. These also have been calculated, and the results are shown by the curves in the lower part of the accompanying diagram. It will be noted that it is quite immaterial whether the outward or the homeward journey is made with or against the wind, as the curves are symmetrical about the centre zero ordinate.

Attention may be particularly drawn to three points which emerge as the result of an examination of the curves:—

(a) That the maximum radius of action is obtained in a calm atmosphere, since when flying in a wind the time spent in travelling in the direction opposite to that of the air is always longer than that during which the aeroplane is travelling with the wind.

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The Daimler Book.

REGARDING the useful book presented by the Daimler Company to the Air Services, of which mention was made in our last issue, we learn that the Daimler Co. have been inundated with applications for copies. These, however, they have been unable to comply with direct, as the whole of the edition has been divided

(b) That the higher the air speed of the aeroplane the less is the effect of variations in wind velocity upon the radius of action, which points to the desirability of high-speed aeroplanes for long-distance flights.

(c) That the radius of action is less than one-half of the mean of the distances traversed with and against the wind in straight flight.

The last is a point that is frequently imagined to be of less importance than it really is. For example, an aeroplane capable of five hours' flight at an air speed of 80 miles per hour, will, with a wind of 40 miles per hour, have a radius of action of 150 miles. The distance traversed by such an aeroplane in straight flight is 600 miles in the same direction as the wind, and 200 miles in the opposite direction to the wind—giving a mean distance of 400 miles. One half of this mean distance is 200 miles, so that the radius of action is reduced by 50 miles—a not inconsiderable mileage. Its importance was emphasised at the time of the projected German aeroplane raid in January, 1915, when aeroplanes were seen to leave the French coast, travelling in the direction of Dover; but owing to the strong winds prevailing at the time, they had to turn back before reaching this country. Assuming that their base was somewhere around Zeebrugge and that they travelled along the French coast as far as Calais, the route traversed by them was not more than 90 miles in length.

In one of his despatches "Eye-witness" stated that in making an aerial reconnaissance, the observer either travels over a previously selected line of country, or passes to and fro above a certain definite area. Assuming that the machine follows a route parallel to the direction of the wind and that the area to be reconnoitred is 10 miles distant from the aircraft base, with an aeroplane having an air speed of 70 miles per hour, the wind velocity being 30 miles per hour; it would be possible to make four double journeys of approximately 33 miles in length over the enemy country, if the fuel and oil carried are sufficient for a flight of five hours, and four double trips of approximately 19 miles in length if the duration of flight is only three hours. If, therefore, an observer can efficiently examine an area having a diameter equal to the elevation at which he is flying, it will be possible for him to reconnoitre the country having a maximum area of approximately 150 square miles with a five hours' fuel allowance, and of 86 square miles with a three hours' fuel allowance, from a height of 6,000 feet.

In the foregoing, as pointed out, consideration has only been given to the case where a fore-and-aft wind is blowing, because so soon as the effect of a side wind is introduced, it is necessary to make a separate investigation for every different aeroplane speed and wind velocity and for each point of the compass. This complicates the general problem considerably, and does not render the effect of the wind upon the radius of action any clearer. In general, a reconnaissance will not last for so long a period as five hours; but the values given in the chart may be readily utilised in calculating the distances that may be covered during shorter or longer periods, since these will vary directly as the time taken for a given reconnaissance.

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between the Royal Naval Air Service and the Royal Flying Corps, and the distribution has been undertaken by the Admiralty and the War Office. Those who wish for a copy should apply to their commanding officers, who, in turn, should indent upon the Directorate of Military Aeronautics or Secretary of the Air Department of the Admiralty, as the case may be.

MAY 18, 1916.

FLIGHT

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

War Office, May 9th.

"*Egypt.*—The general officer commanding in Egypt reports that two hostile aeroplanes attacked Port Said at 7.30 a.m. on May 7th, but were quickly driven off by our anti-aircraft guns.

"Eight or nine bombs were dropped, wounding three of the civilian population, but causing no damage."

"*Mesopotamia.*—General Lake reports on May 7th an aerial combat took place, one of our machines being engaged with a hostile monoplane. Our machine was forced to descend owing to a perforated petrol tank, but succeeded in reaching our lines. Both pilot and observer were unhurt."

War Office, May 11th.

"*East Africa.*—An aeroplane despatched to reconnoitre the line of the Usambara Railway has failed to return."

French.

Paris, May 11th. Afternoon.

"During the night from the 10th to the 11th four of our bombardment aeroplanes dropped twenty-six shells on the railway stations of Damvillers and Etain and on a park near Foameix, where a fire broke out."

Paris, May 13th. Evening.

"During the night of May 12th-13th one of our squadrons, consisting of ten aeroplanes, dropped forty-three shells on the stations of Nantillois and Briulles and on the bivouacs in the regions of Montfaucon and Romagne. During the same night one of our aeroplanes dropped eleven shells on the airship sheds of Metz-Frescaty."

Russian.

Petrograd, May 10th

"Near Czartorysk we brought down an enemy aeroplane, and made prisoners the observer and the aviator."

Petrograd, May 11th.

"In the region of the Middle Strypa, east of Podgaitzy, a German captive balloon broke from its moorings and fell behind our lines near Gussiatin."

Italian.

Rome, May 11th.

"An enemy aeroplane dropped bombs near the railway station of Ospedaletto (Sugana Valley), killing several horses. Our aeroplanes bombarded the railway station of San Pietro di Gorizia and the environs of Aisovizza."

Rome, May 13th.

"Enemy airmen flew over the Lower Isonzo, but were driven off by ours, the latter dropping some bombs on enemy camps and troops at Novavas and Rangiano."

German.

Berlin, May 10th.

"German aviators heavily bombarded factories at Dombasle and Raon l'Etape."

Berlin, May 11th.

"German aeroplanes bombarded Dunkirk and the railway precincts near Adinkerke."

Berlin, May 12th.

"A German aeroplane squadron lavishly bombed the railway station of Horodieja, on the Krashin-Minsk line."

Berlin, May 13th.

"A German battle airman shot down an enemy biplane over the Bourguignon Wood, south-west of Laon."

"A British aeroplane was brought down on Thursday by our anti-aircraft fire south east of Armentières."

Berlin, May 14th.

"Enemy airmen who dropped bombs on Miroviza and Doiran were driven off by our anti-aircraft guns."

Austrian.

Vienna, May 15th.

"On Saturday afternoon a squadron of seaplanes successfully bombarded the military works at Valona and on the island of Saseno. They returned safely in spite of very heavy fire from anti-aircraft artillery."

Turkish.

Constantinople, May 9th.

"*Kut-el-Amara.*—Although before the capitulation the enemy destroyed a portion of his guns, rifles, and war material, and threw the remainder into the Tigris, nevertheless booty remained which has not yet been counted, and which, with slight repairs, can be again employed. This includes . . . four motor cars, three aeroplanes, and a quantity of war stores not yet counted."

Constantinople, May 12th.

"*Mesopotamia.*—A hostile aeroplane was hit by our guns, and came to earth on fire behind the enemy's trenches."

From Other Sources.

MR. G. J. STEVENS, writing to the *Daily Telegraph* from Salonica on Sunday, says:—

"The French aviation corps organised and put into execution this morning an aerial raid of a magnitude not before attempted on this front. The aeroplanes left at four this morning to attack reported enemy concentrations at Xanthi. About 400 bombs were thrown, causing, it is believed, great damage among the enemy's military encampments, buildings, and Zeppelin bangars.

"All the aeroplanes returned safely."

The *Journal* under date May 11th reports from Athens that a squadron of Allied aeroplanes from Mytilene has made a raid on the environs of Smyrna.

Recent Italian air raids on Trieste are reported, according to Reuter's Zurich correspondent, to have occasioned much damage to property, but little loss of life.

In a despatch to the *Daily Telegraph* from Kuma, dated May 3rd, and dealing with the siege of Kut, Mr. Edmund Candier says:—

"The large quantity of grain discovered on January 24th could not be utilised at once owing to the difficulty of grinding for so large a garrison, but mill-stones were dropped in lump by aeroplanes, and the engine was fed with oil stored in the naval barges."

"During the last phase, while the relieving force were being held up on the narrow flooded front at Sanna-i-Yat, stores were dropped into Kut by aeroplane, chiefly salt, flour, and tea. Previously aeroplanes had been employed for dropping light articles into the

camp, such as rifle cleaners, spare parts for wireless, nets for fishing, and at one time cigarettes and tobacco, but as it was impossible to supply all, General Townshend ruled out these luxuries as introducing a form of privilege. He himself shared every privation with his troops."

The *Nieuws van den Dag* learns from Schiermonikoog that two seaplanes and three Zeppelins were observed on Sunday cruising to the north of that island.

The *Daily Mail* correspondent at Salonica, writing on Sunday, says:—

"A French air squadron heavily bombed the camp of the 10th Bulgar Division at Xanthi (a Bulgarian town near the frontier of Greek Macedonia east of Salonica) and caused a panic among the troops. The airmen returned safely."

The *Petit Journal* on May 3rd gave a vivid story of a successful air battle between a Nieuport scout and two Fokkers. The episode occurred on the north-east front just after a German aeroplane decorated with an Iron Cross had been brought down. Immediately two Fokkers attacked the French aeroplane and brought it down. Lieutenant de G— at once got up in a very fast baby Nieuport. When 4,500 ft. up he engaged the first Fokker, charged it, and shot it down in the French lines. The second German machine came to the rescue of its comrade, and an exciting duel followed, the machines rising and swooping to get the advantage. Lieutenant de G— went straight for the enemy, and after he had fired off all his ammunition the second Fokker came down. The Frenchman returned safely to camp.

Flying Corps of several officers and machines. Among those forced to descend within the enemy's lines was Major H. L. Reilly, a flight-commander of exceptional ability, who has much distinguished service to his credit.

"On November 25th the remainder of the wounded were sent back to Lajj. Up to this time it appeared from hostile movements to their rear—reported by air reconnaissance—that the Turks contemplated a retirement from their remaining positions. But apparently they received fresh reinforcements on the 25th. During the afternoon large columns were seen advancing down the left bank, and also inland, as if to turn our right flank; while hostile cavalry threatened our rear."

Aeroplanes in Mesopotamia.

In the despatch from General Sir John Nixon, K.C.B., on the operations in Mesopotamia from October to December, 1915, published in a supplement to the *London Gazette* on May 11th, there are the following references to aircraft work:—

"During General Townshend's concentration at Aziziyah accurate information had been obtained by aerial observation regarding the position of the Turkish defences

"The officers employed on these reconnaissances displayed the same intrepidity and devotion to duty that has been commented on in previous despatches. Unfortunately, during the actual period of the battle at Ctesiphon, a series of accidents deprived the Royal

ANOTHER SPEECH BY LORD MONTAGU.

SPEAKING at a meeting organised by the Navy League, at Ealing, on May 9th, Lord Montagu again emphasised that the longer the war lasted the more would it partake of the nature of an aerial campaign.

General Pétain, the hero of Verdun, recently talked of a French aerial force of 50,000 aeroplanes. In his wildest dreams, Lord Montagu said, he had never dared to put before even the mildest of Cabinet Ministers any figures of that sort, but he had suggested that we might eventually get into five figures if great energy were displayed and immediate action taken. The possession of an overwhelming superiority in the air would, before the end of the war, have a very marked effect indeed; and unless we wished to be left behind we must have a better organisation for producing aircraft and training pilots; and to secure this we must combine the administration under one single control.

Without going into definite figures, there could be no harm in his saying that since the beginning of the war we had increased the strength of our naval air service forty times, and of our Army air service twelve times; but that was not enough. He was not blaming the Government, because they had many serious problems to consider. Had not the time arrived, however, when the air service should be capable of independent action—of carrying on an independent bomb raid? There were certain points of great importance behind the German lines which might be attacked even with the machines we had, and he believed that later on we would be able to attack these points with greater advantage.

The whole way from the coast of Denmark to the coast of Holland the Germans have a constant patrol of rigid airships, able to stop in the air for at least two days, and, he believed, more, able to see over a horizon measured by, say, 70 or 80 miles, instead of seven or eight in the case of a destroyer, and able thereby to inform the German Fleet about the movements of our Fleet.



French Flyers at Verdun.

WRITING of the fine air work which has been done at Verdun, *L'Aurore* mentions the pilots Daucourt, who made the record flight from Paris to Constantinople and Cairo; Boillot, the racing motor car airman; Helen, the winner of the Michelin Cup; and Navarre. Every one of them has been repeatedly mentioned in despatches, several have received the Legion of Honour, and others have won the Military Medal.

French and German Air Work.

THE *Matin*, in comparing the styles of fighting of French and German aviators, points out that the latter usually rise to 12,000 ft. and swoop down from behind, letting off a whole ribbon of their machine guns at a few yards' range, and then make off with all speed. The French aviator shows more dash, harrying his adversary by encircling evolutions, and sticking to him till he brings him down. The exploits of Navarre and Guynemer are instanced. The former brought down two machines the other day whilst he was spirally gliding, working his machine-gun with the incomparable skill of a master who has now seventeen enemy planes to his credit.

Aeroplanes for Denmark.

AT a meeting, at Copenhagen on May 9th, of the Committee of the National Fund for providing fifty aeroplanes, under the patronage of Prince Axel, who is a pilot, it was decided to start business as early as possible. The majority of the aeroplanes are to be manufactured in Denmark and partly in Sweden, and the remainder will probably be purchased in America. They are to be of the very latest design, and include different types from large biplanes to speedy monoplanes.

Fatal Accident at Hendon.

ON May 15th an inquest was held at Hendon relative to the death of J. C. Chapman, who was killed while flying on May 10th. It was stated that he was practising figure eights at a height of 250 ft. when he collided with another machine, the pilot of which was injured and is now in hospital. A verdict of "Accidental Death" was returned.

A Double Fatality.

WHILE flying near Norwich on the 14th inst. the machine of Lieutenant O. H. Hake was seen to be in difficulties, and in coming down crashed into a fir tree. It was completely wrecked, and both the pilot and passenger, Mr. F. G. Sumner, were killed.

German Aviators Using Explosive Bullets.

ALONG nearly the whole Russian front the Austro-German aviators, according to the *Russkoye Slovo*, have begun to use explosive bullets in their aeroplane machine guns. German prisoners say the order to fire explosive bullets from aeroplanes has been given to all German aviators, as in striking benzine tanks of aeroplanes they almost always cause an explosion.

Zeppelins were being built at a rate, probably, as far as Lord Montagu could make out, of one a fortnight, or 26 a year, and the Germans were not losing them at the same rate.

Hitherto there have been 30 raids over this country, and we had only succeeded by our gunfire, both by sea and land, in bringing down three. It could not be pretended that we are satisfied with that result.

There was another point—Zeppelins were becoming more perfect. The one which was wrecked off the coast of Norway the other day, he was informed, had six engines—one more than any Zeppelin had hitherto been known to possess. They were also much longer, and carried a greater supply of fuel.

The maximum height at which a Zeppelin could come over to this country laden with bombs was probably between 6,000 ft. and 7,000 ft. It might be 8,000 ft. in certain conditions of weather. But as soon as she had discharged her load of bombs she could attain a much greater height—probably somewhere about 10,000 ft.

The proper place to stop the Zeppelin was not when it got over London, but when it left Germany. It is then at its lowest point and stuffed with bombs, and if you happened to hit one of the bombs the Zeppelin would be no more.

He was glad to tell them that the Anti-Aircraft Service was now far better organised than it had been. Lord French and the Government should both be given due credit for that. The Anti-Aircraft Service were a very fine body of men, and under great difficulties they had already achieved much.

He believed that the Government were beginning to realise the importance of unifying the Naval and the Military flying services. He did not blame them for taking a reasonable time; but he warned them that every month that the present system was persisted in made unification more difficult.



German Factory Burned Out.

THE *Koelbing Avis* on May 9th reported that a few days previously a fire broke out in a large aeroplane factory at Altona through the explosion of the tank of an aeroplane which a mechanic was filling with petrol. Sixty-two other aeroplanes, some of which were completed and others in a half-finished state, were destroyed, together with the factory.

German Seaplane Wrecked.

THE *Ribe Stiftstidende* last week reported that parts of a German seaplane, wrecked on April 25th, had been found floating 16 miles south of the Vyl Lightship and brought to List, on the Island of Sylt, by a fishing smack.

Another Zeppelin Reported Sunk.

ACCORDING to the Bergen correspondents of the *Verdens Gang* and *Morgenb'ad*, at 5 a.m. on May 12th, three miles west of Heir, a great airship was reported going south-west. She changed her course, going northward. Later, some ships, probably torpedo-boats, were sighted, steaming at full speed in the same direction. The airship made some strange turns over a fishing vessel which was near. She then seemed to descend obliquely towards the level of the sea, but disappeared in a bank of fog. On Thursday afternoon a large French fleet had crossed west of Vags Island. It is presumed that some of these ships fired upon the airship, which is believed to have been sunk.

Another report from Copenhagen gives the date as May 13th, and says the destroyers were British. The story, however, lacks confirmation.

A Zeppelin Wedding.

ACCORDING to the German papers Count Ferdinand von Zeppelin, the nephew of Count Zeppelin, who was allowed to take the name Zeppelin as the airship pioneer had no son, was married last week in Dormstadt in the presence of his uncle. During the ceremony a new Zeppelin vessel circled above the church.

Count Zeppelin and His Losses.

THE *Basle Zeitung* states that it has received information from Berlin to the effect that Count Zeppelin has taken very much to heart the recent losses of German airships. He has been in close consultation with the Kaiser at the Imperial Headquarters during the past few days.

French Airship Wrecked.

INFORMATION has been received that a new French airship while undergoing her final trials at Sassari, N.W. Sardinia, caught fire and fell into the sea. The crew of six lost their lives, and four bodies were recovered by a French warship. It is stated that the airship was the "T," and was intended for the use of the French Navy.

Models

ALL communications in connection with this section should be addressed to the Model Editor, "FLIGHT," 44, St. Martin's Lane, London, W.C. Correspondents are requested to write on one side of the paper only.

Model Work in Tasmania.

A LETTER is to hand from one of our readers in Tasmania, Mr. Clarence Arnott, and doubtless many will be interested to hear what he has to say regarding model work in that part of the world; we hope Mr. Arnott will send us some photos. of his models later on:—

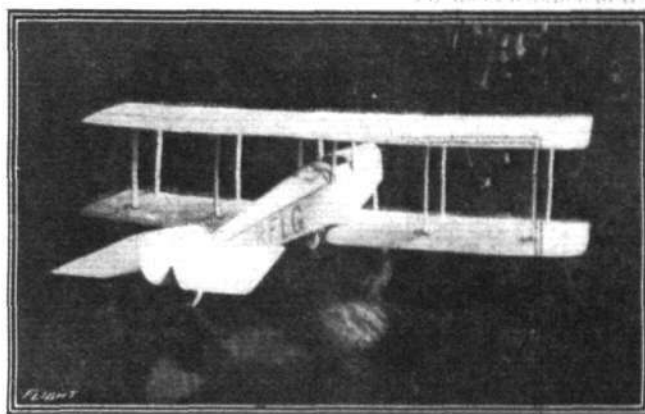
"I am a keen experimenter in aircraft, and have constructed and designed eight tractor machines, six being monoplanes and two biplanes, which have flown from 50 to 70 yards, hand launched, which is very good considering it is always blowing over here. The general public do not take any interest in models over here. They think because a few of us are interested in aviation that we are a bit soft. You will excuse this slang, but it is a fact. But we are going to show them what we really can do later on."

Paper Models.

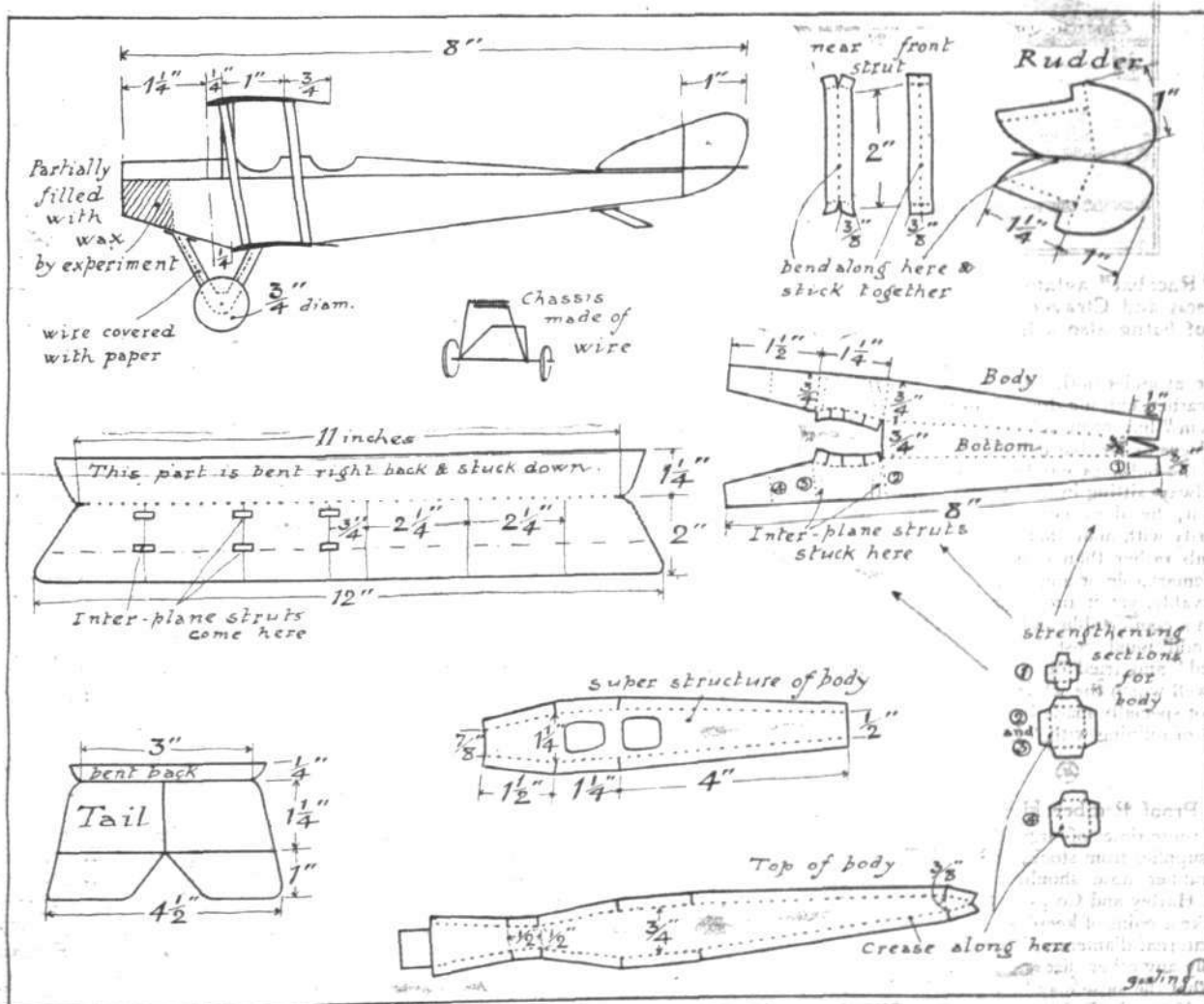
Many of our readers will welcome the accompanying drawings, showing how to make a paper model, which have been sent to us by Mr. R. F. L. Gosling, and they will be able to see from the photograph what a presentable little model can be obtained by these means. Mr. Gosling's model is made entirely of cartridge paper, with the exception of the chassis and wheels, which are made of wire and wood. The scale is about 1 in. = 3 feet in comparison with full-sized aeroplane.

Seccotine, or some similar substance, will probably be found

the most useful adhesive for sticking the various parts of the model. If made with care these models should enable many interesting gliding experiments to be carried out, affording both amusement and enlightenment on many aerial problems.



A paper model made according to the accompanying instructions by Mr. R. F. L. Gosling.



Mr. R. F. L. Gosling's paper model drawn to scale, showing clearly how to construct this clever little miniature.

A LIFE-SAVING AVIATOR'S COAT.

It is pleasing to be again able to call the attention of R.N.A.S. pilots to something of benefit to themselves, evolved by Messrs. Robinson and Cleaver, who are working so strenuously to uphold their reputation as designers of flying equipment embodying utilitarian ideas.

The premier demand made upon a coat for seaplane pilots, is that it shall be warm. Secondly, it must be rainproof. Minor considerations are, the arrangement of pockets of convenient size in accessible positions, some simple and effective method of fastening without having to struggle with unyielding button-holes, and a flexibility of the garment as a whole when in position. Nothing, possibly, is more irritating to a pilot than the horrible feeling of being fastened up in armour, inseparable from stiff and heavy coats.

If in addition to all these above-mentioned necessities, the coat can be so constructed as to be buoyant, supporting the wearer for an almost unlimited period should mischance involve a fall into the water, it has reached about the acme of efficiency in filling all requirements demanded by up-to-date progress.



The "Racobal" aviator's coat, just introduced by Messrs. Robinson and Cleaver. This coat has the extra advantage of being also a life-saving jacket in the water.

The coat under notice is the "Racobal." It is made in the usual black leather, chrome dressed, but in place of the fleece or fur lining "Credem" has been substituted. This is not only warmer than either fleece or fur, but it is also lighter. In addition it adds very little to the bulk, as may be observed in our photograph. A pilot is not always sitting in his machine, and even so, equally as when out of it, he does not care to look, and feel, inflated. It is a peculiarity with man that he will cheerfully take risks against life and limb rather than do anything likely to attract attention as being remarkable or unusual. In the "Racobal" nothing unusual is observable, yet it provides the wearer with the ability to keep afloat in a comfortable and natural position when immersed.

The additional cost is but one guinea, and the coat may be "viewed" and tried on at Regent Street. We would suggest it being well worth the while of pilots already in possession of flying coats not specially made buoyant, to write or call for particulars of the cost of relining with "Credem."



Petrol Proof Rubber Hose.

In these times of urgency it is often important to be able to obtain supplies from stock, and those manufacturers who use petrol proof rubber hose should make a note of the fact that Messrs. Harold Harley and Co., of Harley Works, Beckton Road, London, E., make a point of keeping a stock of this speciality in $\frac{1}{2}$ in. and 1 in., internal diameter, sizes, and, of course, they are in a position to supply any other size required. A further important consideration is that the hose may be passed by the A.I.D. inspector at their factory, if required, thus further avoiding delay. Samples will be gladly furnished to those who are interested.

A Whitecraft Dinner.

AN interesting little dinner took place recently at the Castle Hotel, Richmond, when Mr. Arthur Howitt entertained the original members of the Whitecraft Club and a few of the later members. After the dinner Mr. Ward (the works manager), in thanking Mr. Howitt, remarked upon the keen interest he had taken in their doings from the very beginning.

Mr. Howitt, in replying, said that the remarkable progress which had been made gave one great satisfaction to be associated with such a body of men.

Mr. J. A. Whitehead (Managing Director of the Whitehead Aircraft Company and founder of Whitecraft), said that they had been able to achieve great things, and a very considerable factor in enabling them to do so was the good feeling that prevailed. There was no finer body of men than his men. Whitecraft was a society to bind together the best workers—the best manual workers and the best brain workers—and the society was rapidly growing. They were out not only to beat the Germans now but to lead the world in production after the war. Mr. Whitehead paid a great tribute to Mr. Macphail, who, he pointed out, did something to help Mr. Cecil Rhodes to success, being secretary of the expedition to Rhodesia in 1894 with the Rt. Hon. Cecil Rhodes and Dr. (now Sir Starr) Jameson on the occasion of making the report on the mineral resources of Rhodesia.

Mr. Macphail, who was obviously taken by surprise, said that he felt bound to say that he deeply appreciated Mr. Whitehead's remarks. It was a curious coincidence that, while being with Mr. Whitehead at Richmond, he had once more come in touch with Dr. Hatch, the eminent mining engineer, who also went out to South Africa with the expedition.

Songs were given by Messrs. J. A. Whitehead, F. Wright, W. Chandler, W. Cory, M. Byl, Bastow, and Ralph Wood, Mr. Hagley proving a very efficient accompanist.



IMPORTS AND EXPORTS, 1915-1916.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; and for 1915, see "FLIGHT" for January 13th, 1916:—

	Imports.		Exports.		Re-Exportation.	
	1915.	1916.	1915.	1916.	1915.	1916.
January ...	20,382	1,509	435	6,399	13,706	—
February ...	380	6,444	138	30,693	18,823	—
March ...	280	3,388	7,218	17,872	5,090	7
April ...	2,189	3,383	23,986	22,608	275	3,783
	23,231	14,724	31,777	77,572	37,894	3,790



Aeronautical Patents Published.

Applied for in 1915.

Published May 18th, 1916.

8,823. G. W. HARRIS. Aeroplanes.

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